

LSG 770-430

ORIENTATION
STUDY GUIDE
LUNAR MODULE

CONTRACT NAS 9-1100

EXHIBIT E; PARAGRAPH 3.7.4

TYPE III DOCUMENT

FOR TRAINING PURPOSES ONLY; IN
SUPPORT OF LM SUBSYSTEM BRIEFINGS

REFERENCE CF22/T37-67-T482

LM TRAINING SECTION
PRODUCT SUPPORT DEPARTMENT
GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK

NOVEMBER 1967

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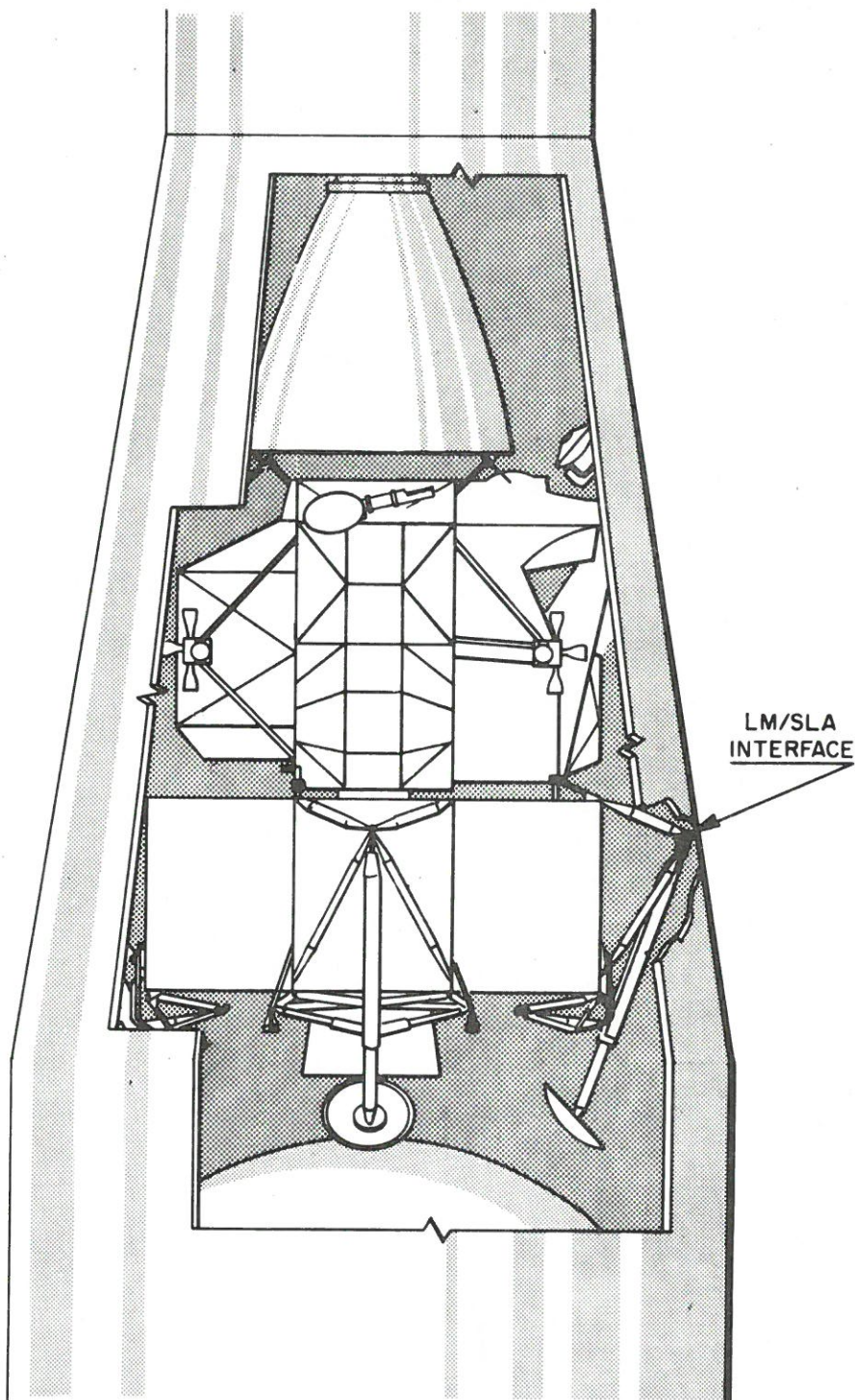
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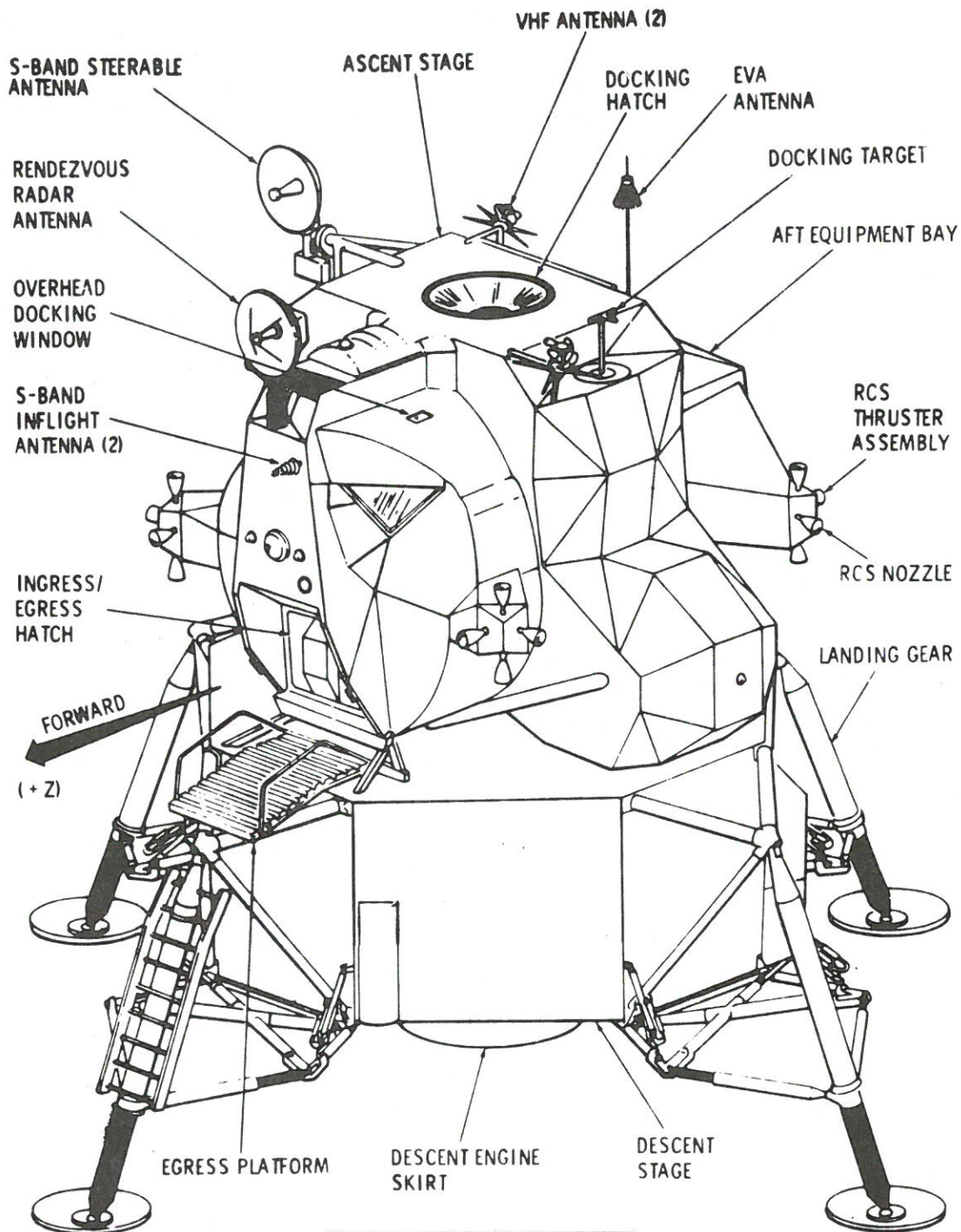
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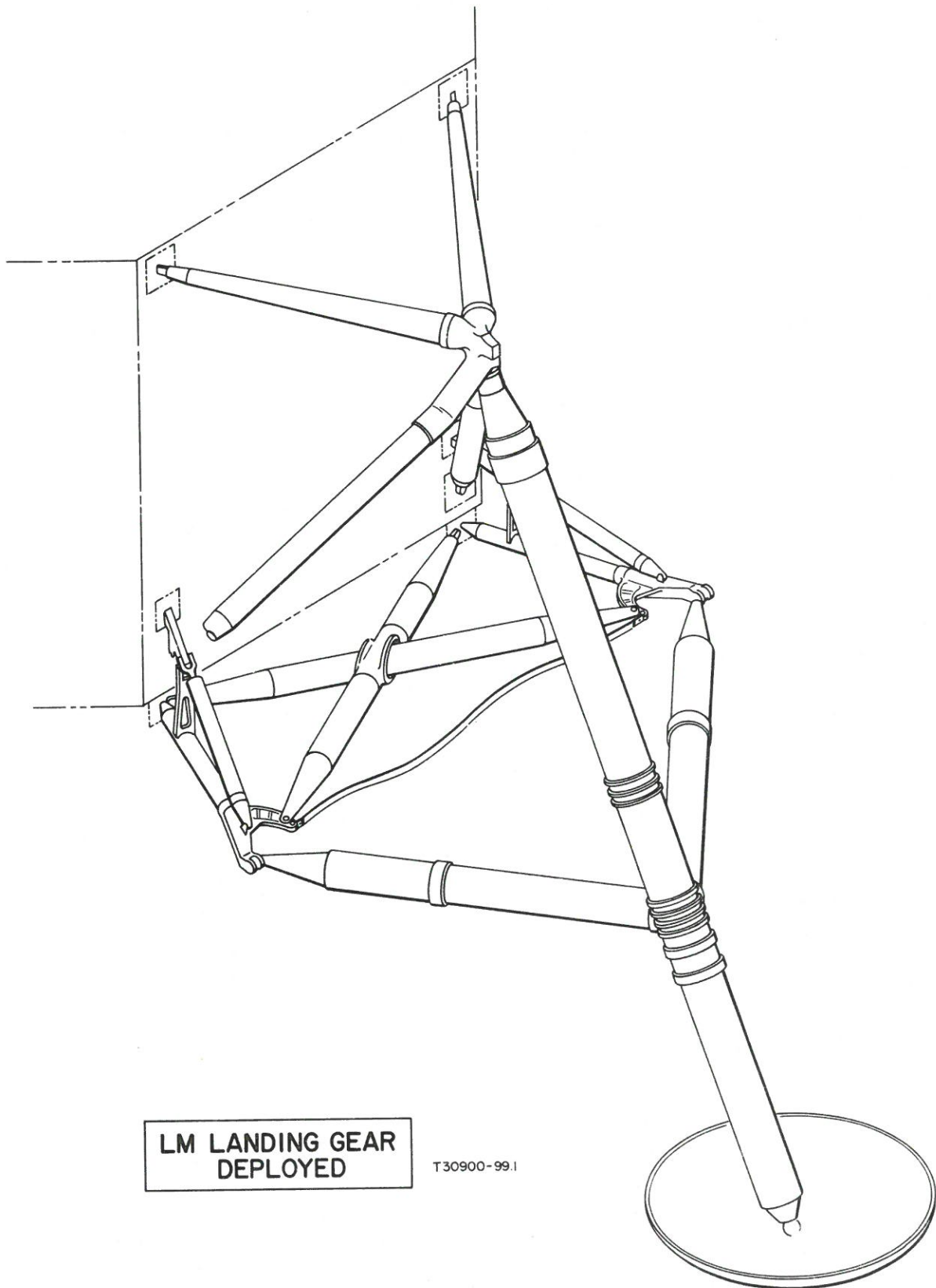
LM SLB BOOSTER INTERFACE

T30005-14.1



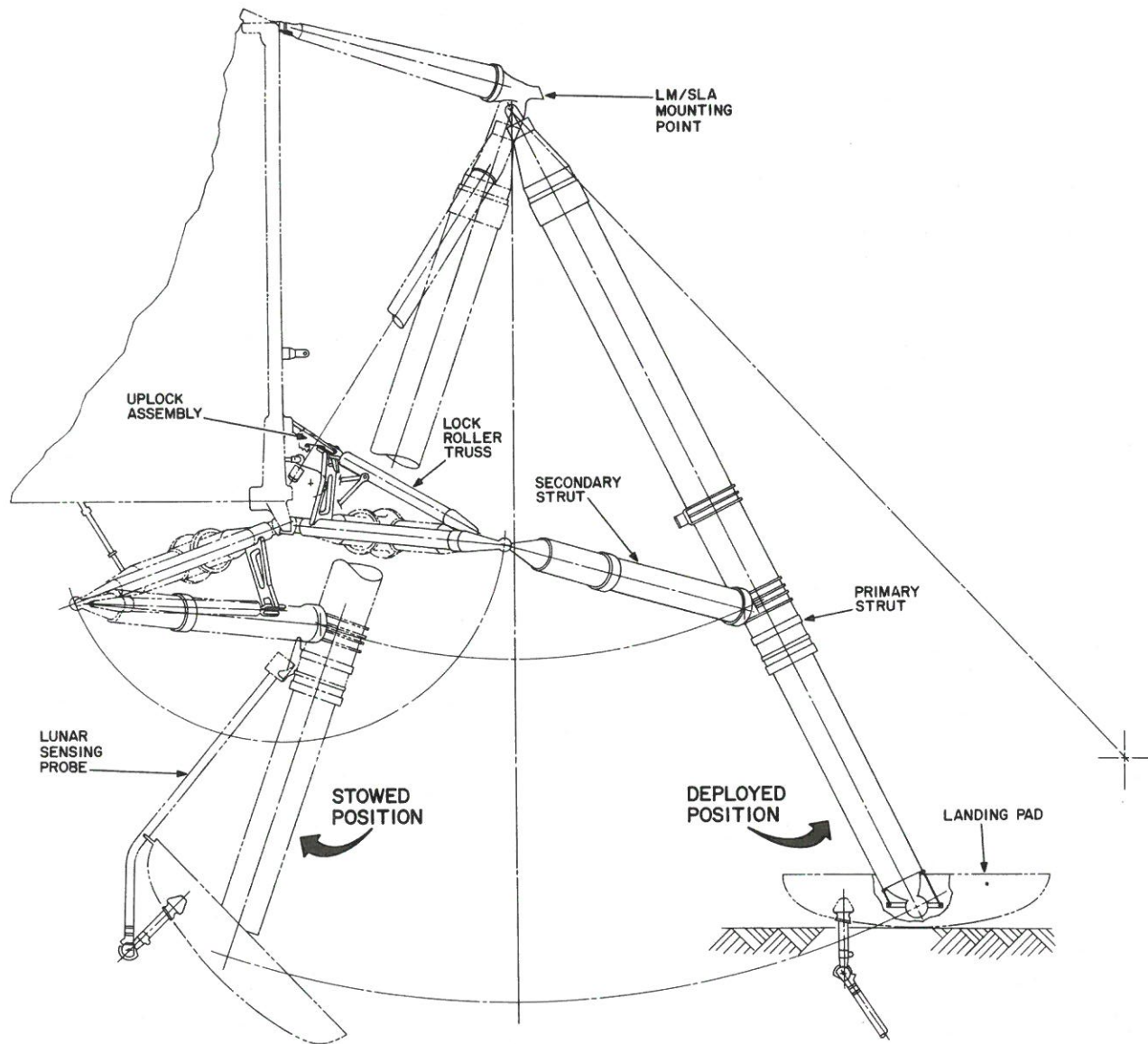
LM VEHICLE

T 30005-15.1



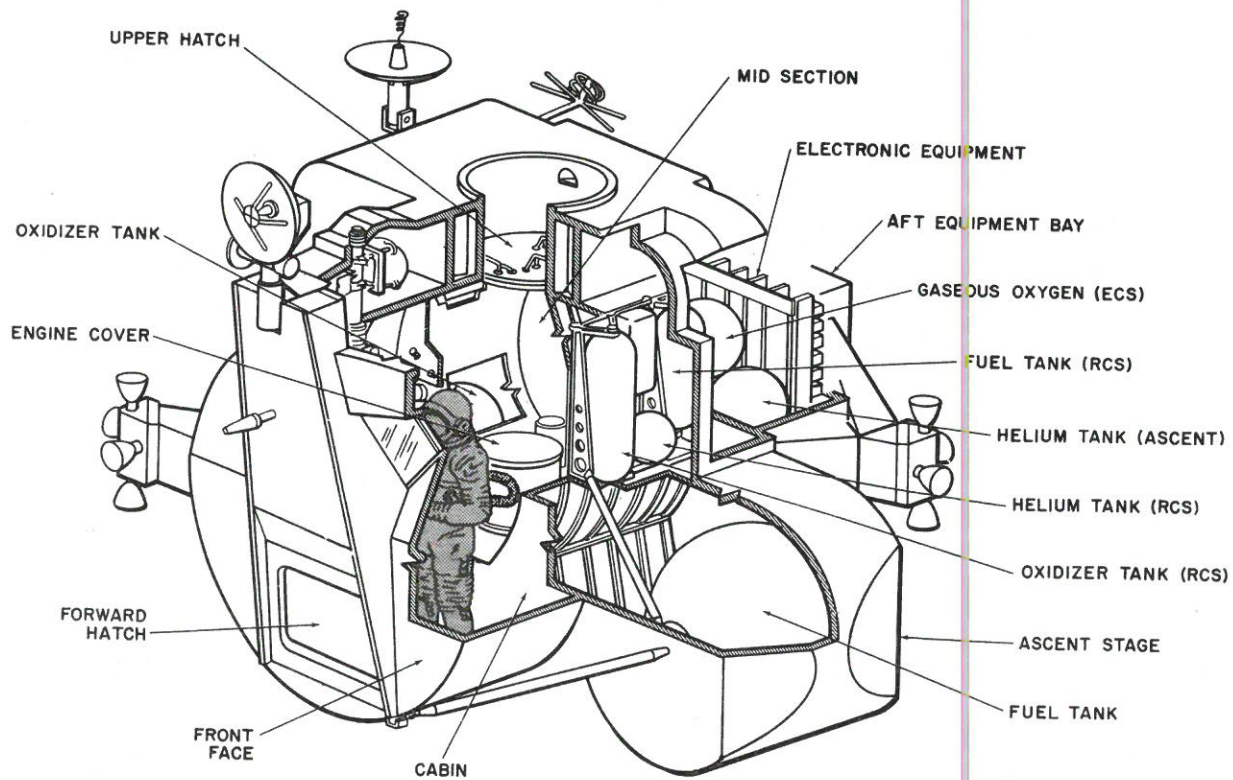
LM LANDING GEAR
DEPLOYED

T30900-99.1



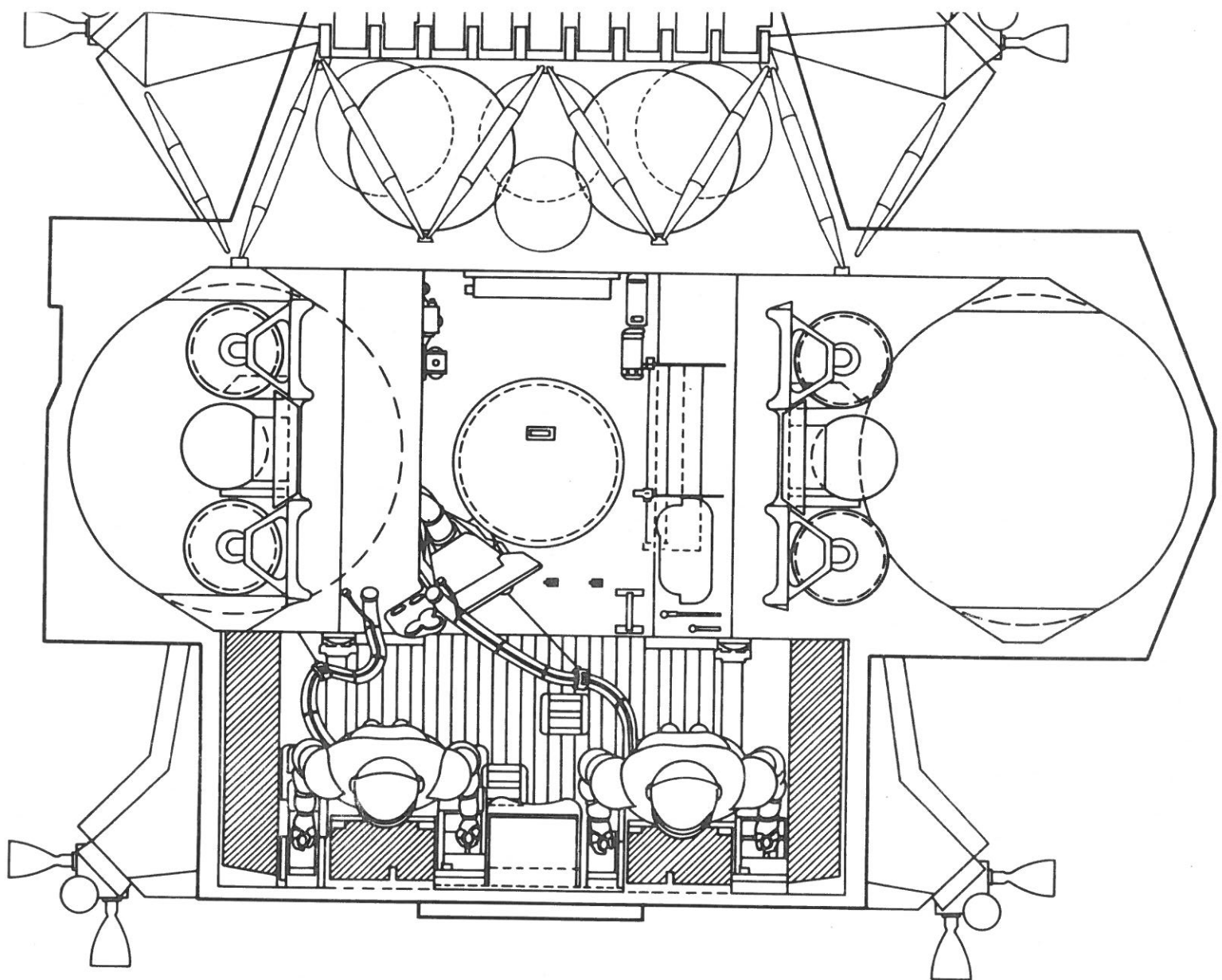
LM LANDING GEAR

T30915-44.1

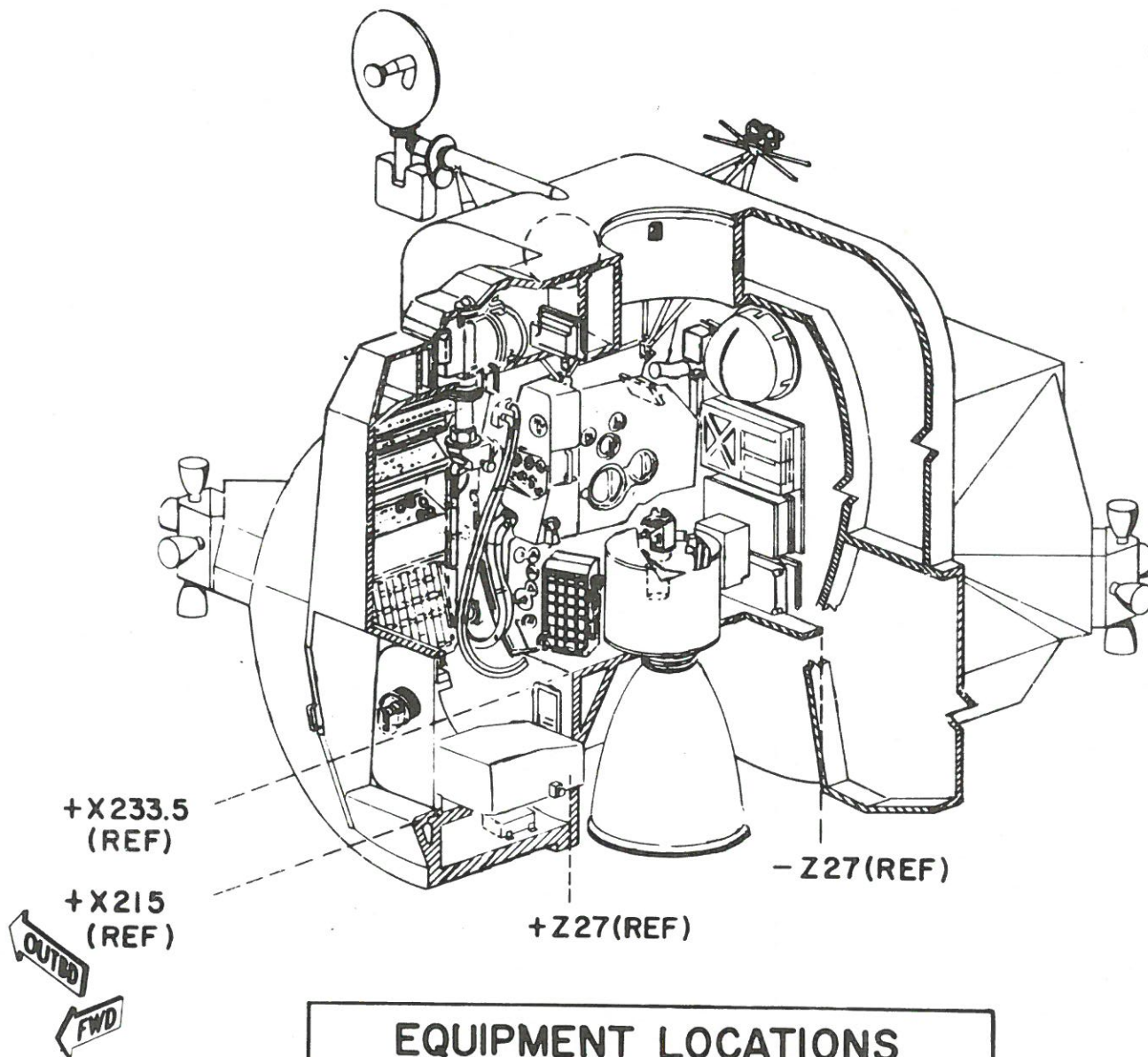


ASCENT STAGE

T30207-45.1

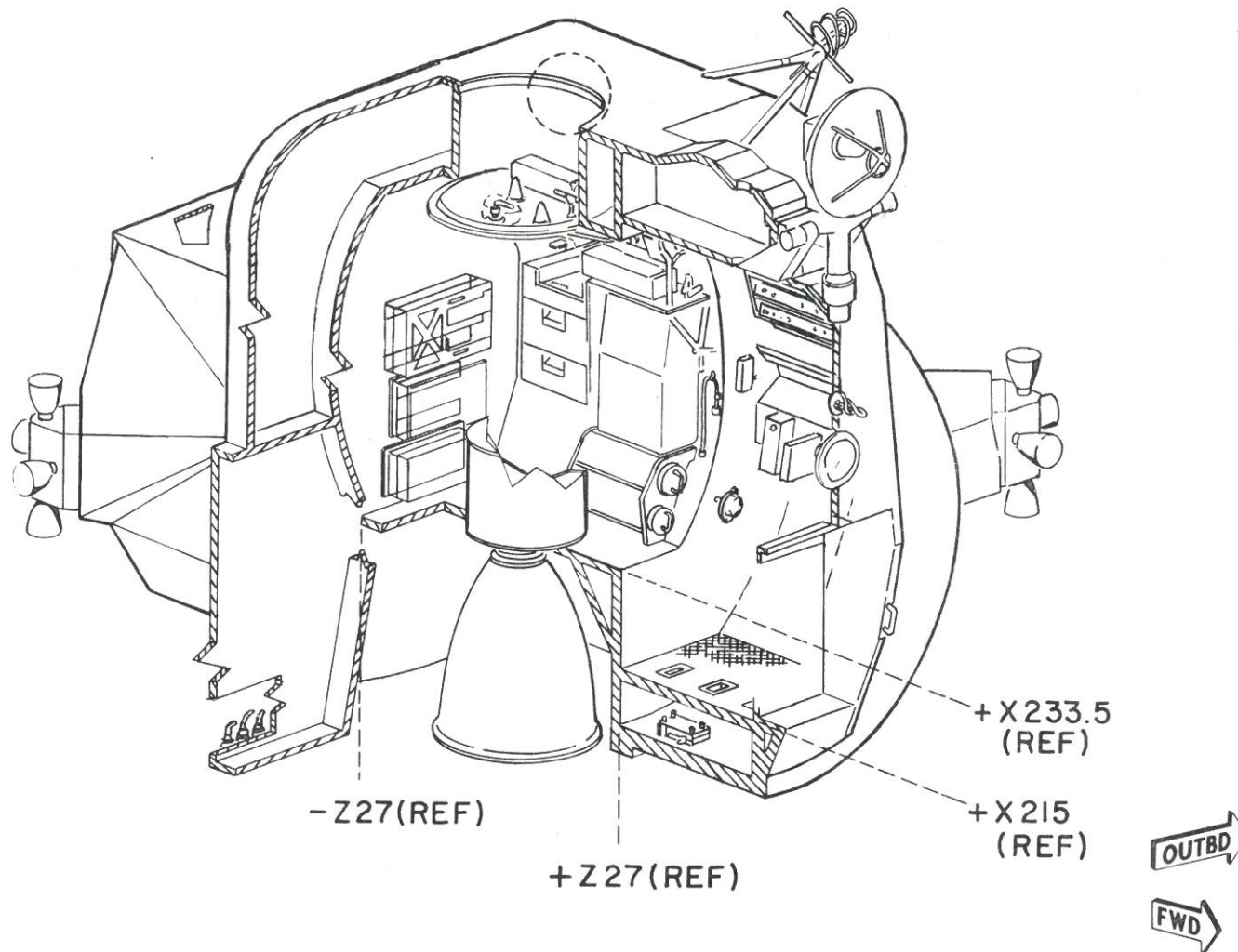


ASCENT STAGE PLAN VIEW



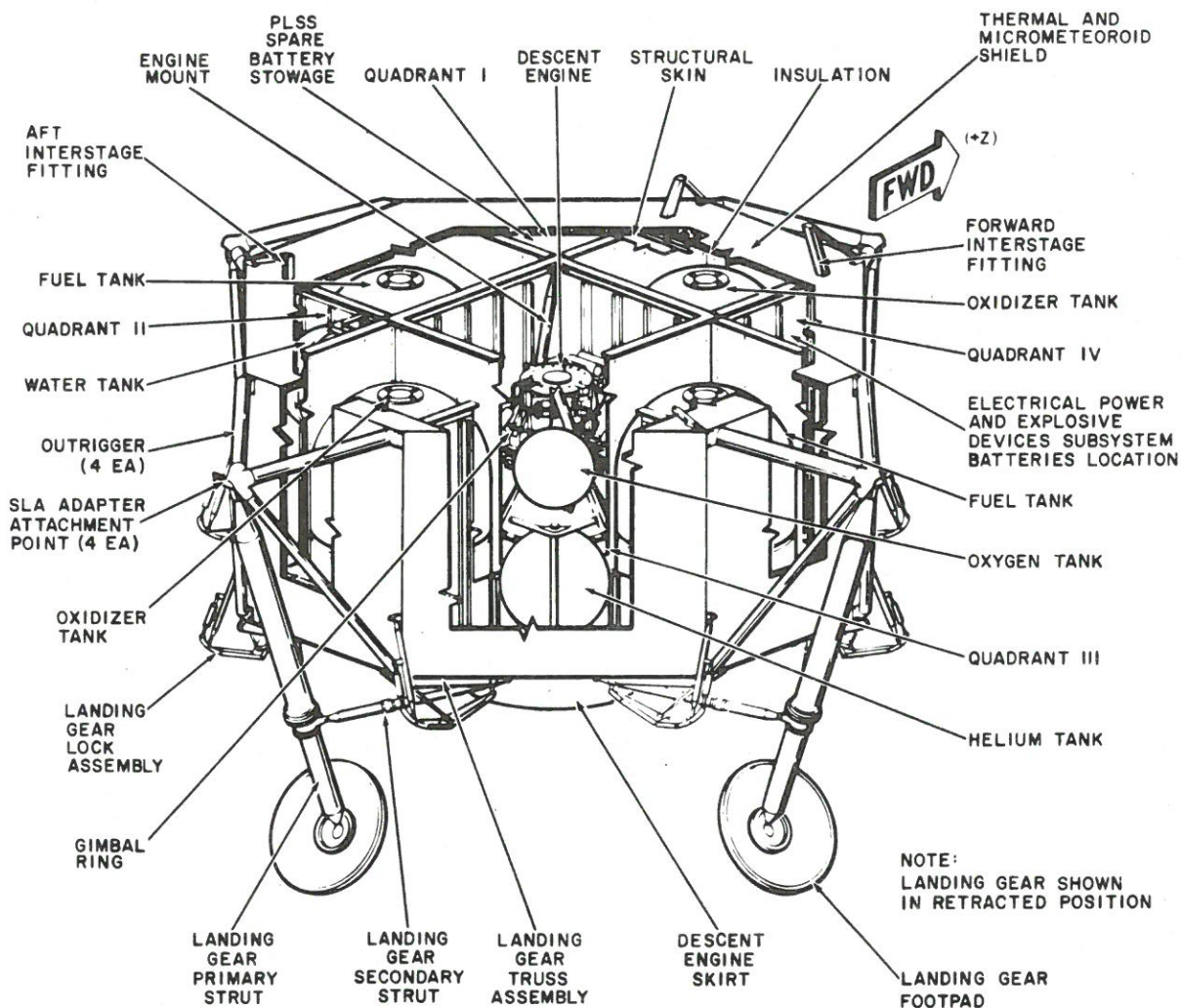
**EQUIPMENT LOCATIONS
ASCENT STAGE-R/H SIDE**

T30005-32.1



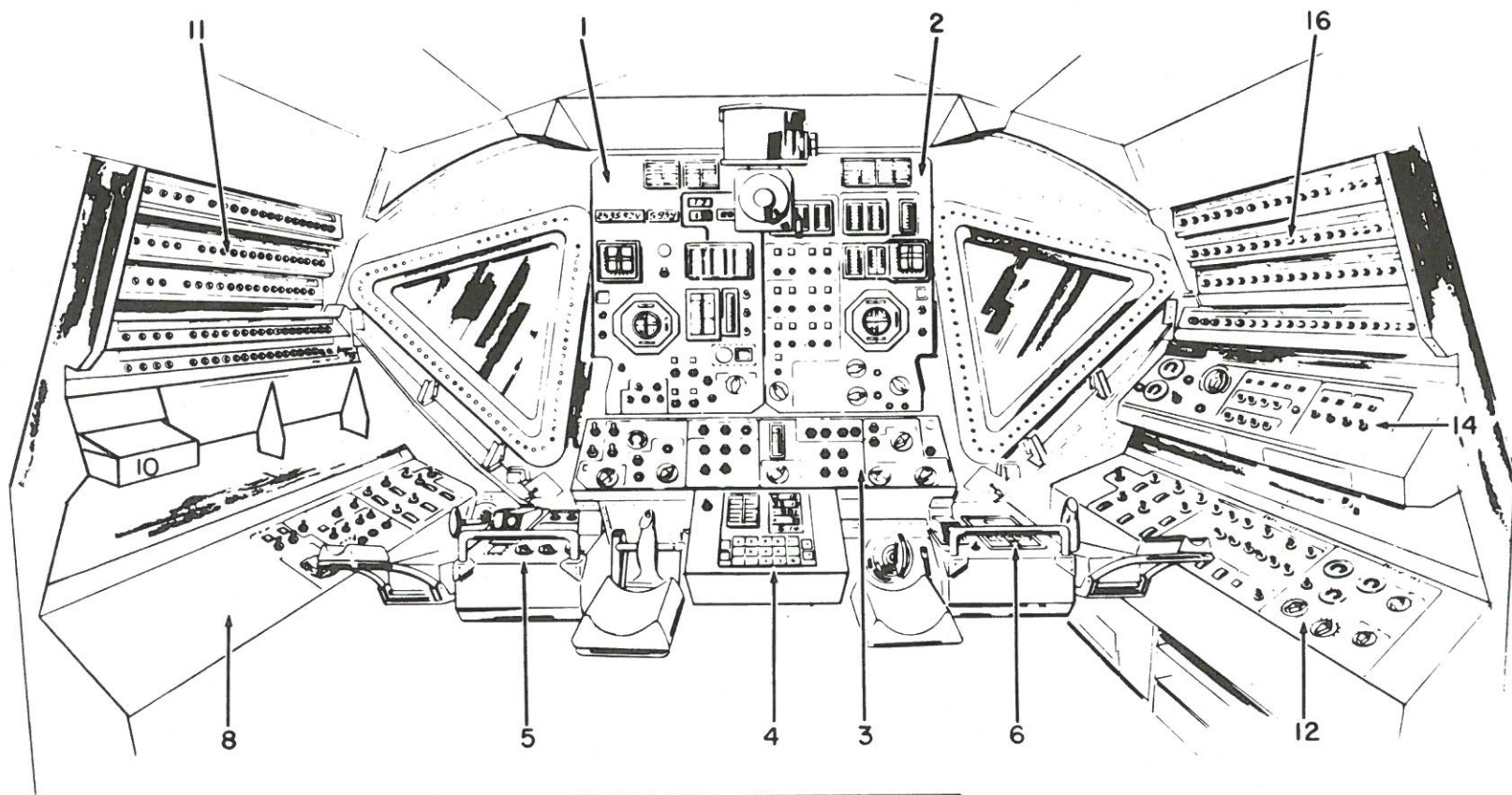
EQUIPMENT LOCATIONS
ASCENT STAGE-L/H SIDE

T30005-31.1



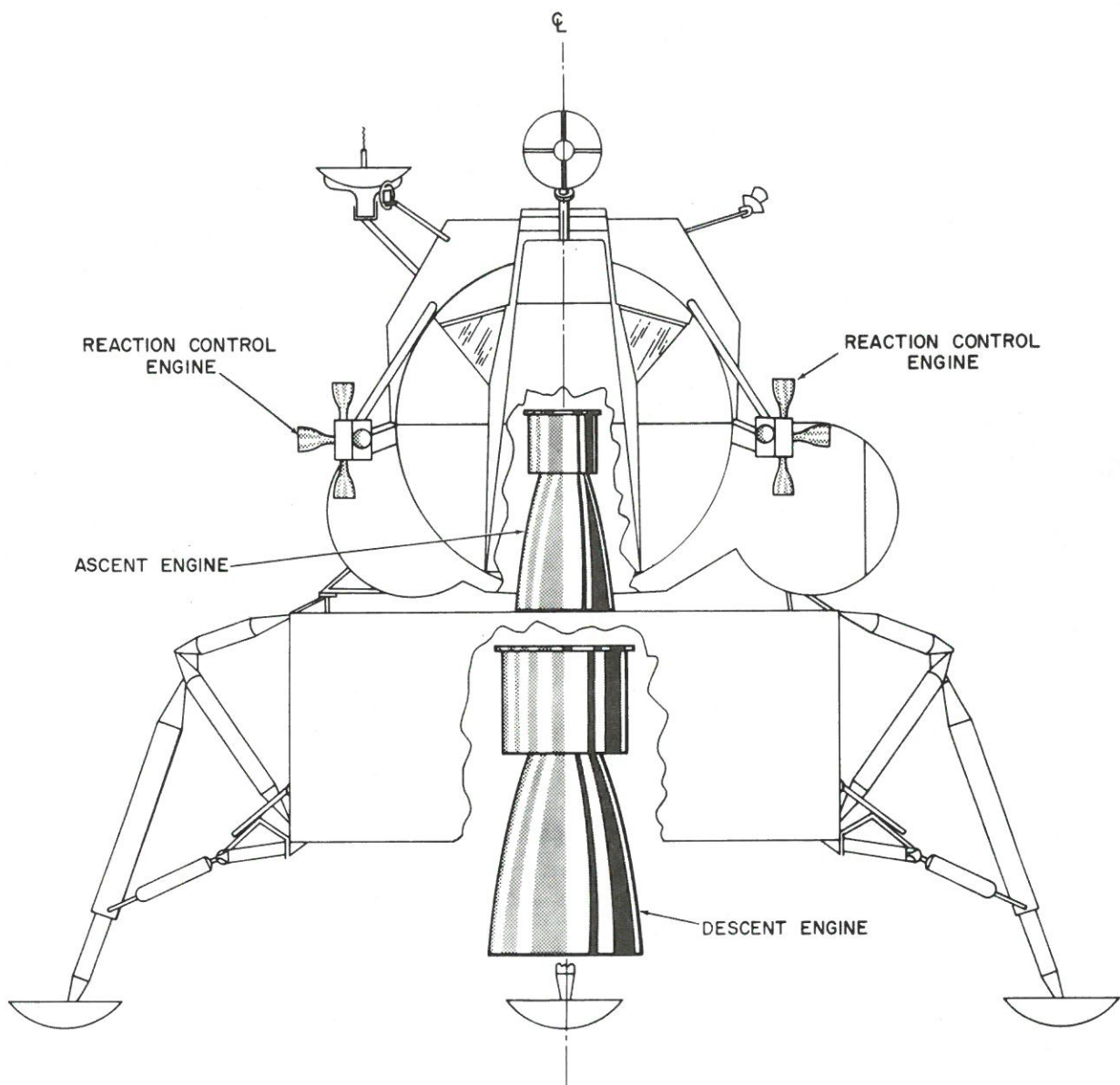
LM DESCENT STAGE

T30915-42.1



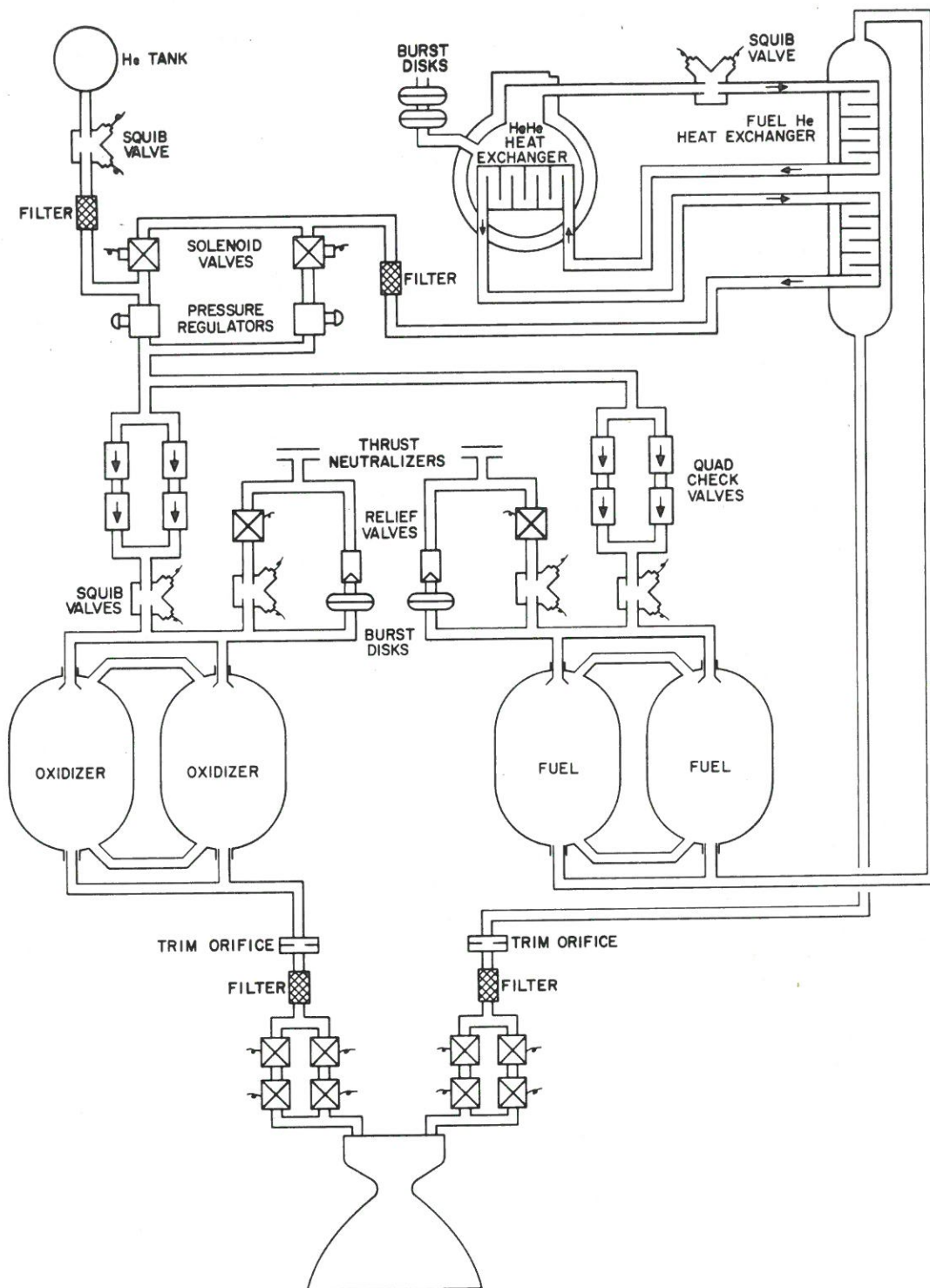
LM DISPLAYS AND CONTROLS

T30900-150.1



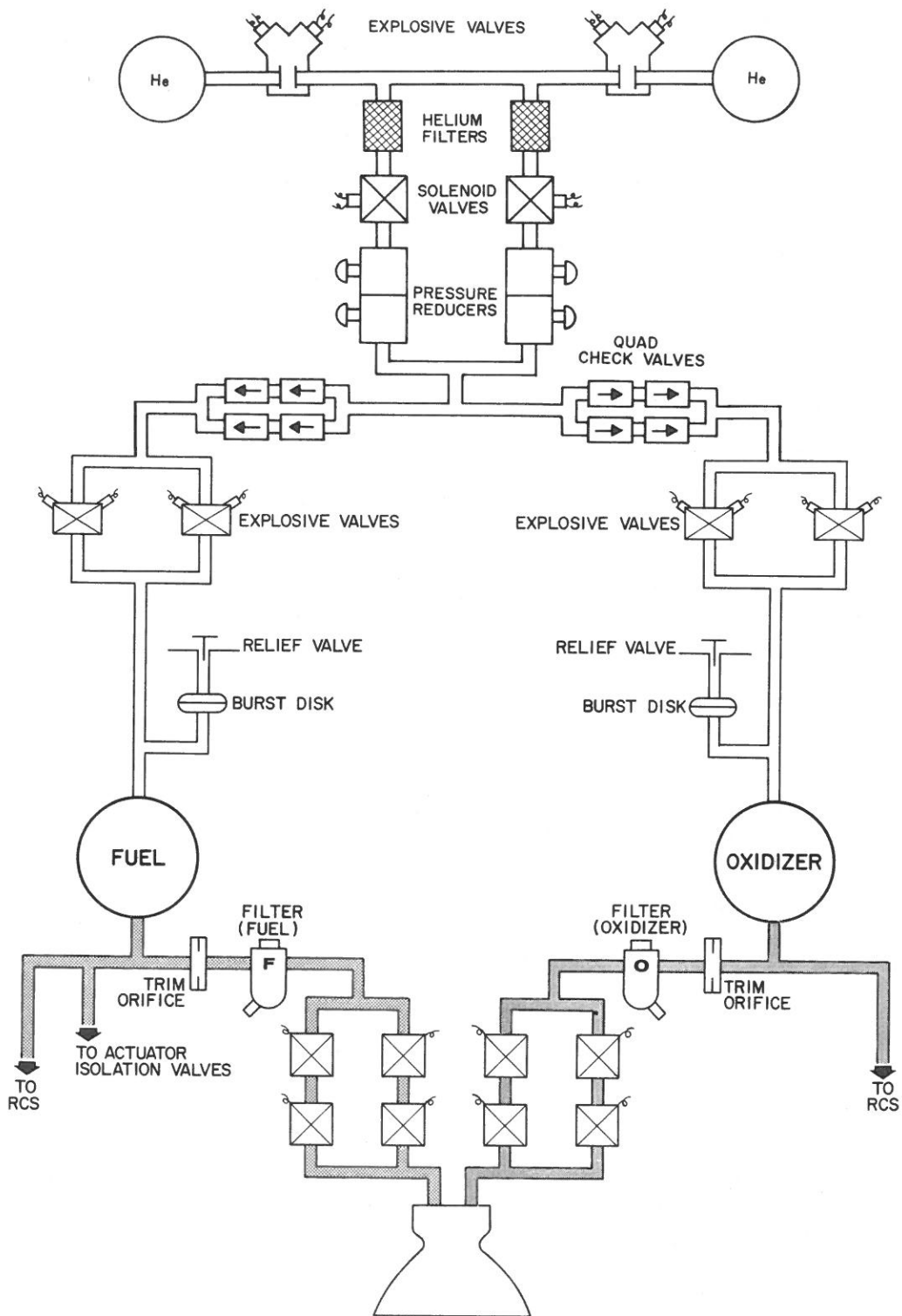
LM ENGINE LOCATIONS

T30207-18.1



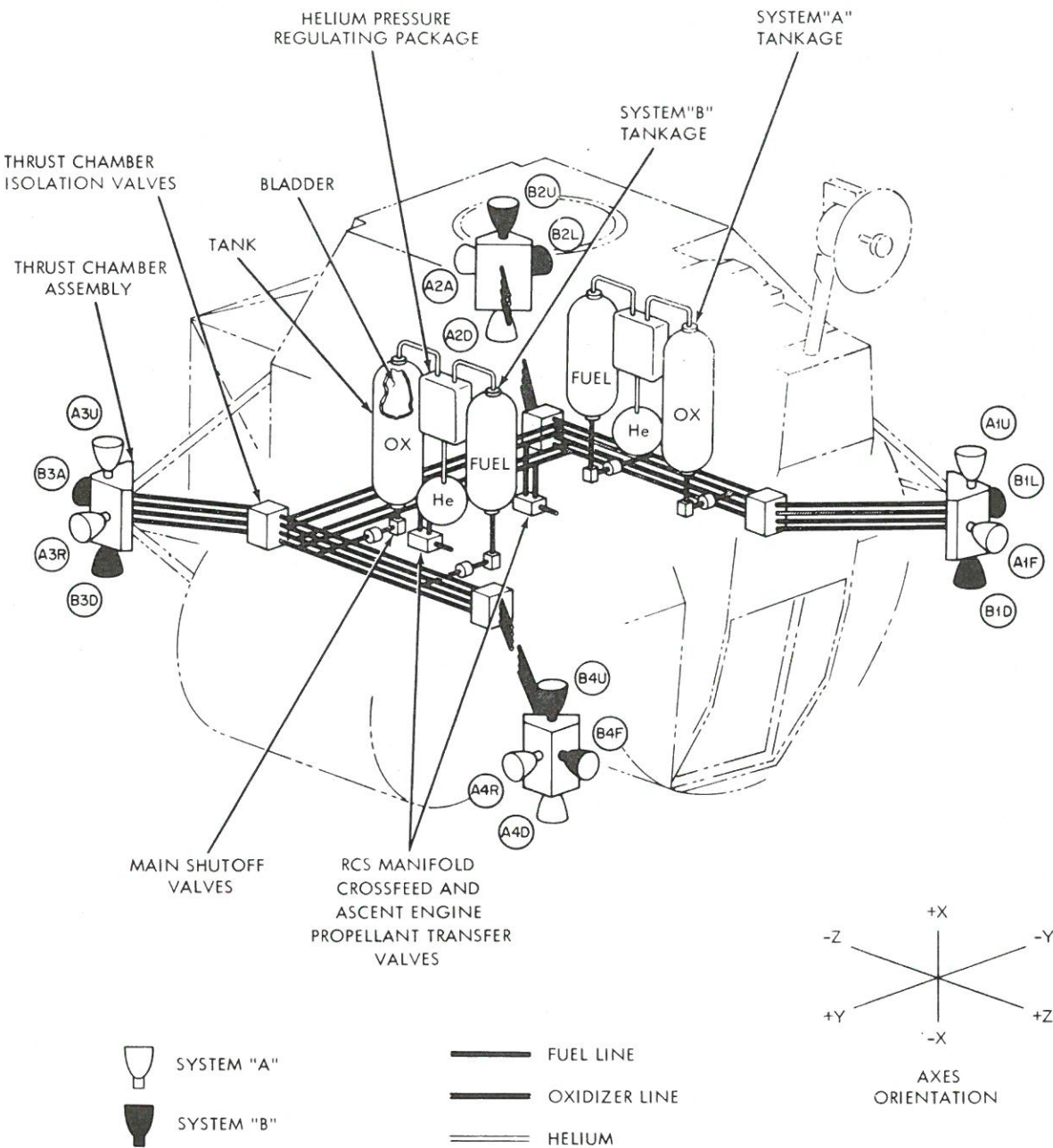
**DESCENT PROPULSION
SCHEMATIC**

T 30005-154.1



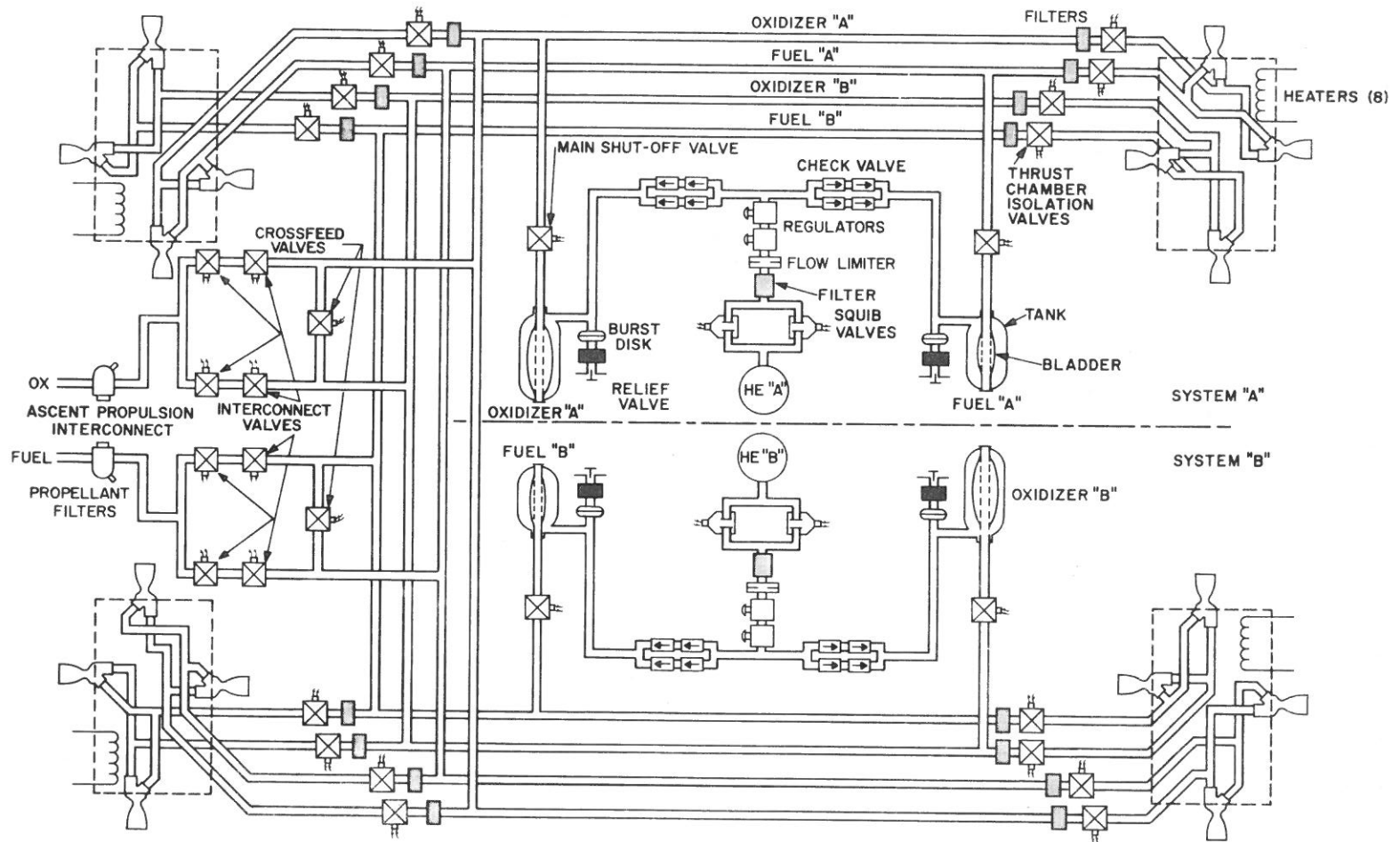
ASCENT PROPELLANT SYSTEM

T30207-46.1



RCS INSTALLATION

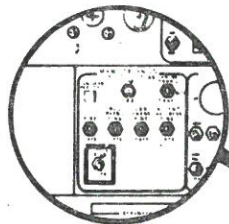
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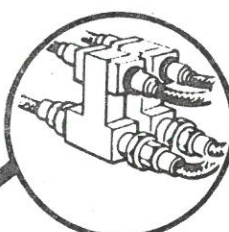
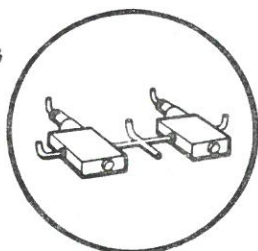
RCS PROPELLANT SYSTEM

T30207-63.1

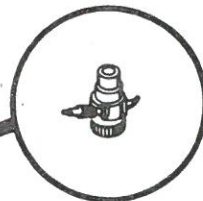
**RCS SYSTEM
HELIUM PRESSURIZING
VALVES**



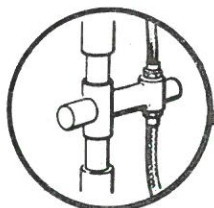
**ED CONTROL
PANEL**



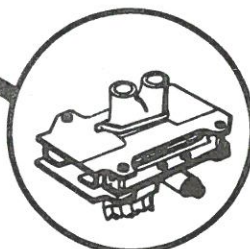
**ASCENT PROPULSION SYSTEM
HELIUM PRESSURIZING
VALVE**



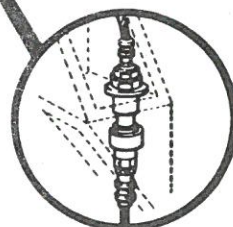
**THREE DEADFACE
CONNECTORS
(CIRCUIT INTERRUPTER)**



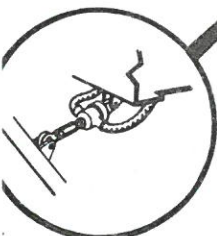
**ASCENT PROPULSION SYSTEM
HELIUM PRESSURIZING
VALVE**



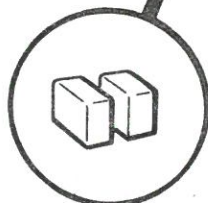
**INTERSTAGE
UMBILICAL
CUTTERS**



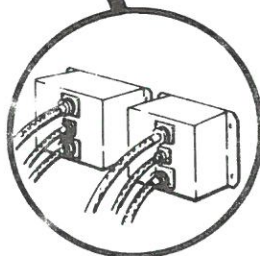
**INTERSTAGE
STRUCTURAL
CONNECTION**



**LANDING GEAR
UPLOCK**



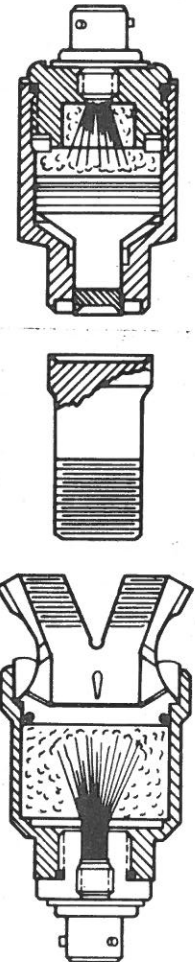
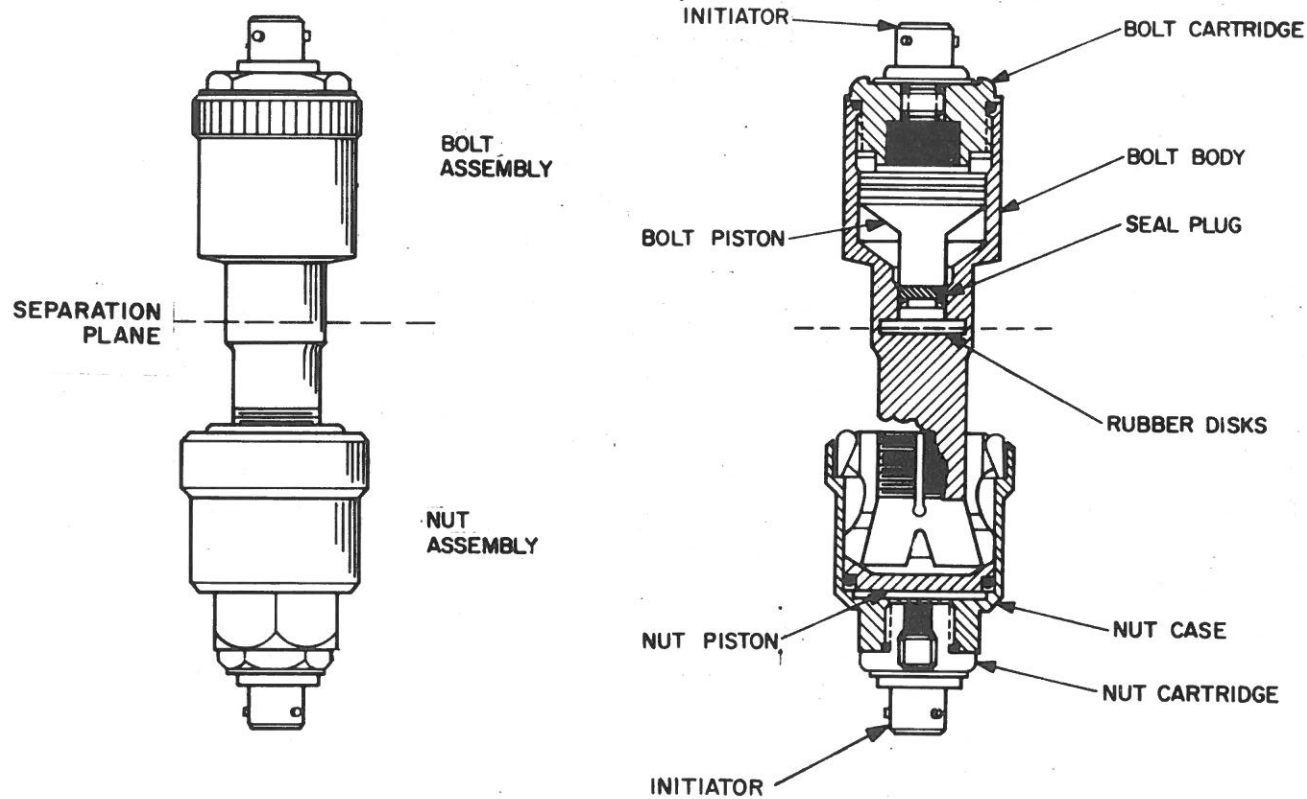
**TWO ED BATTERIES
DESCENT STAGE**



**TWO ED RELAY BOXES
DESCENT STAGE**

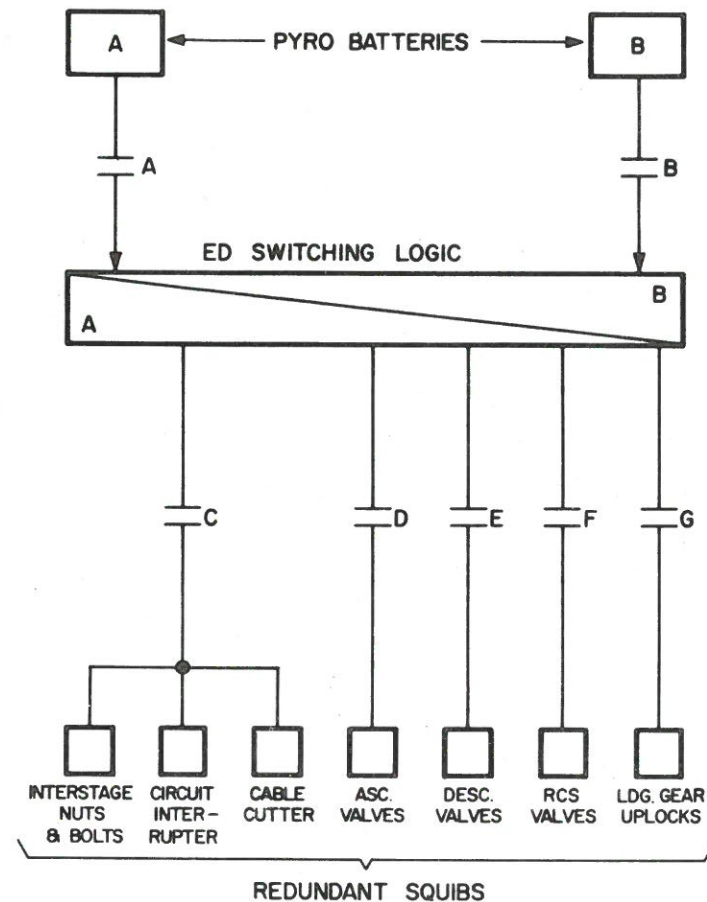
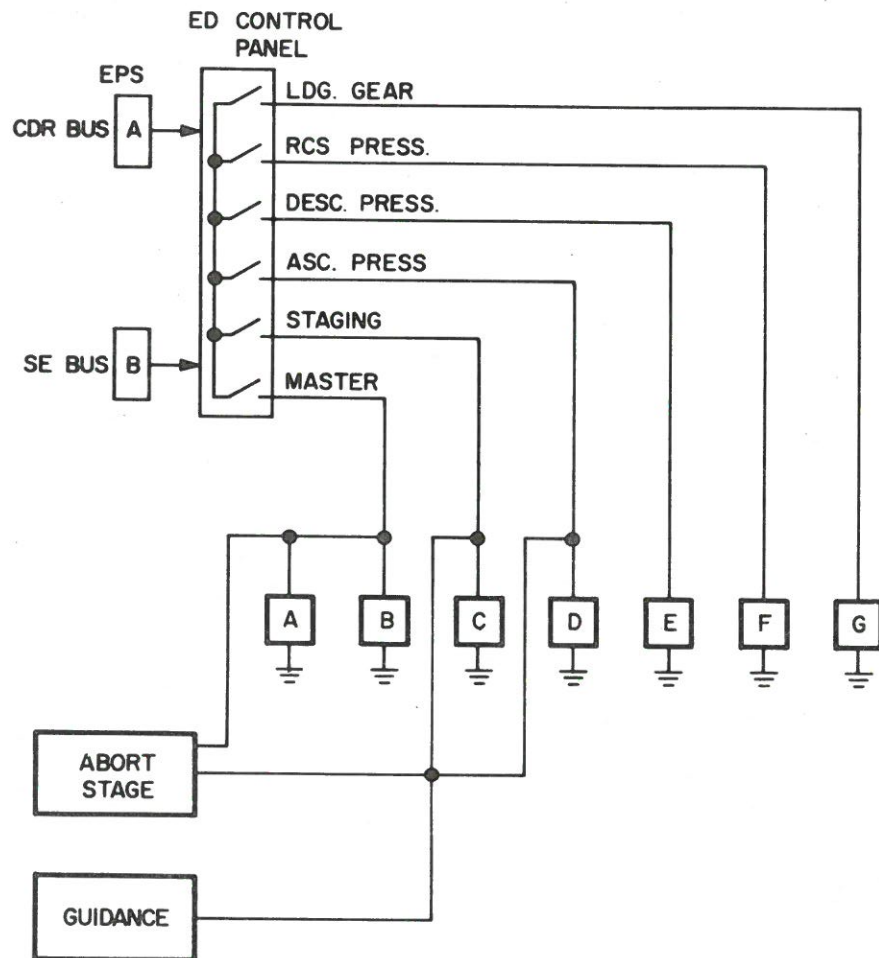
EXPLOSIVE DEVICES COMPONENT LOCATIONS

T30905-13.1

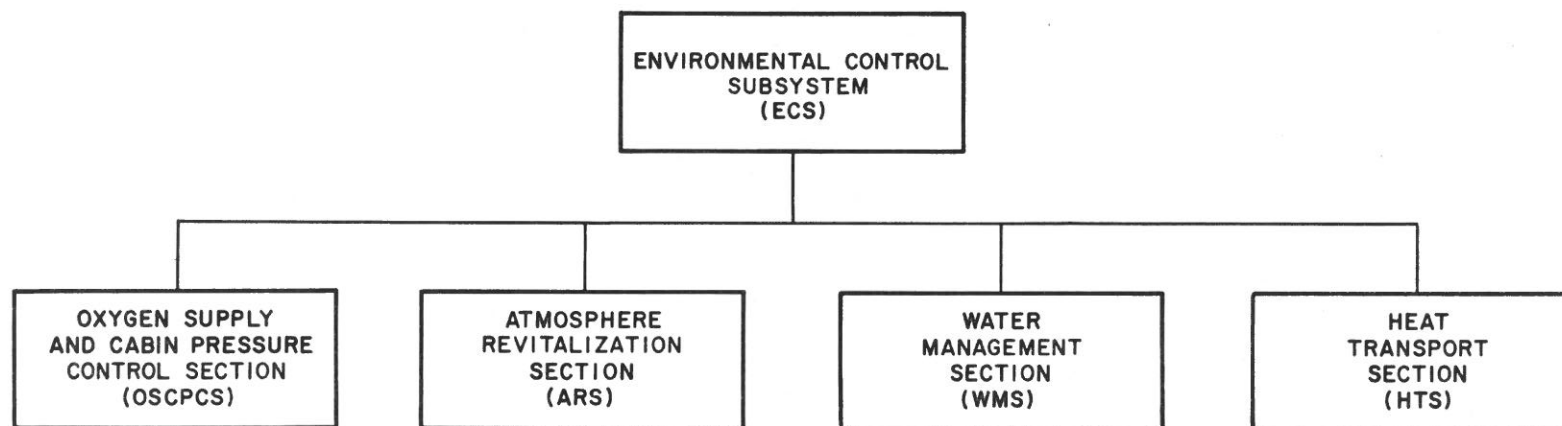


INTERSTAGE STRUCTURAL CONNECTION
NUT AND BOLT ASSEMBLY

T30905 - 58.1

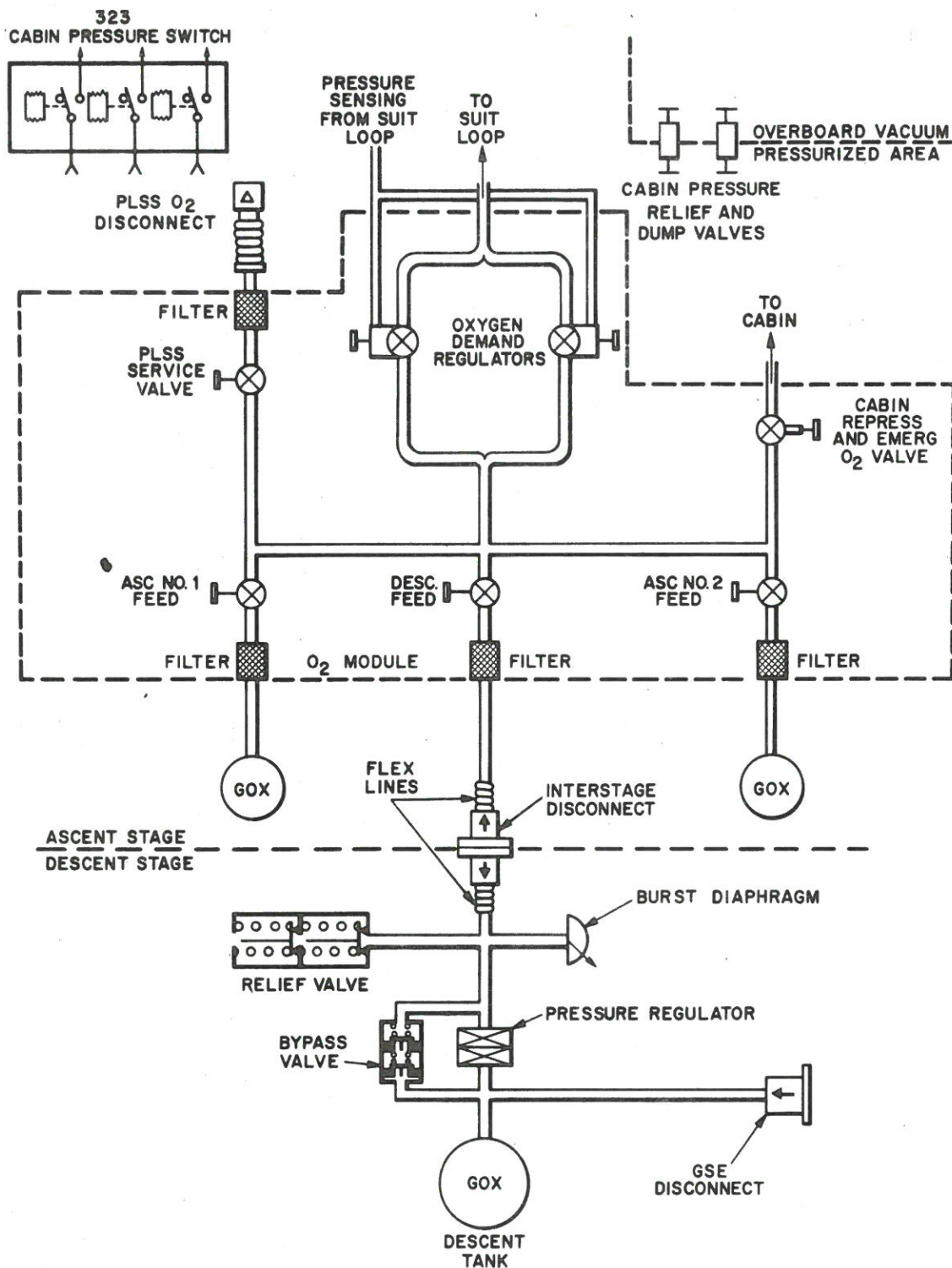


**ELECTRO EXPLOSIVE DEVICES
BLOCK DIAGRAM (SIMPLIFIED)**



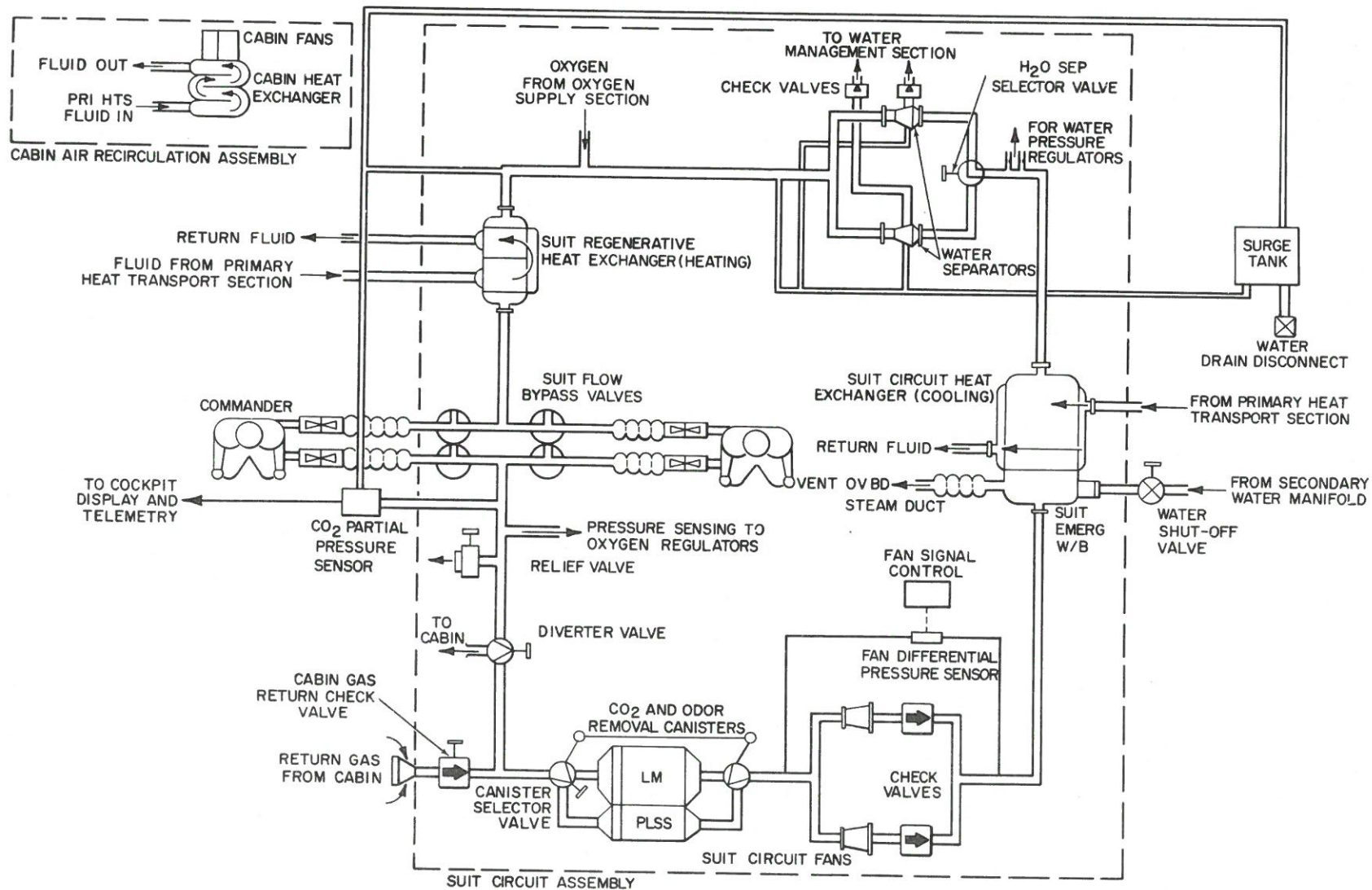
LM ECS BASIC BLOCK DIAGRAM

T30005-61.1

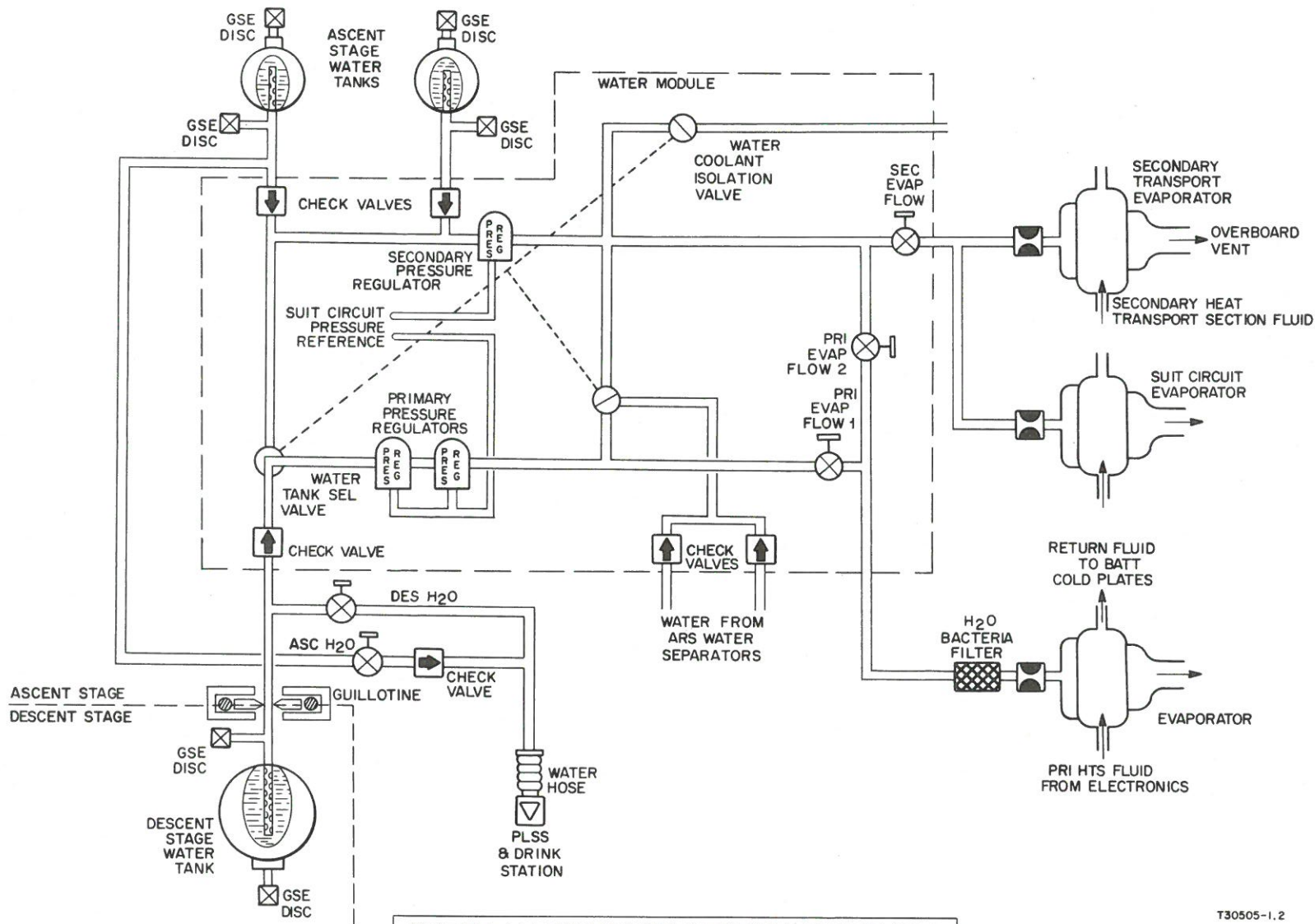


**OXYGEN SUPPLY AND CABIN PRESSURE
CONTROL SECTION SCHEMATIC**

T30005-158.1

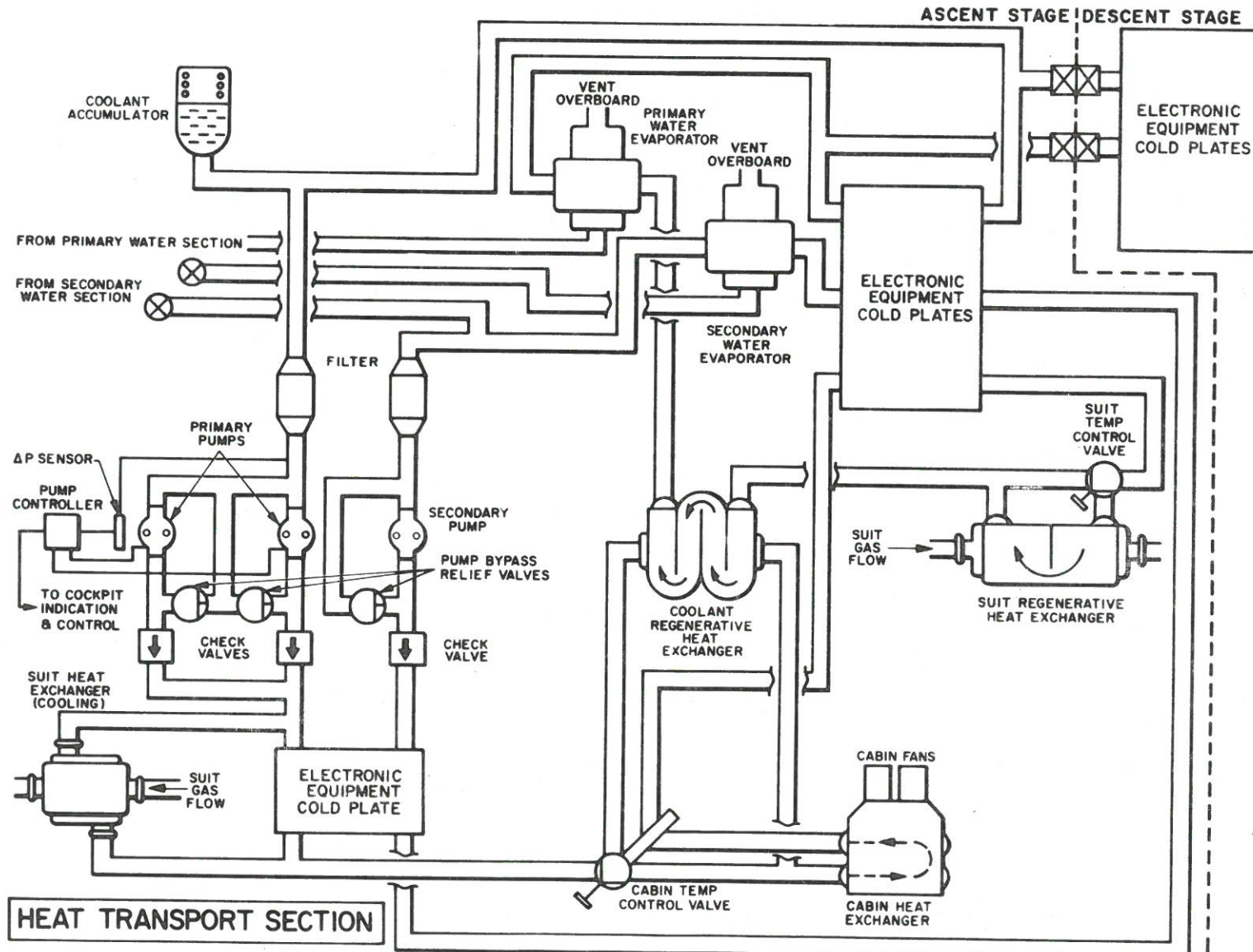


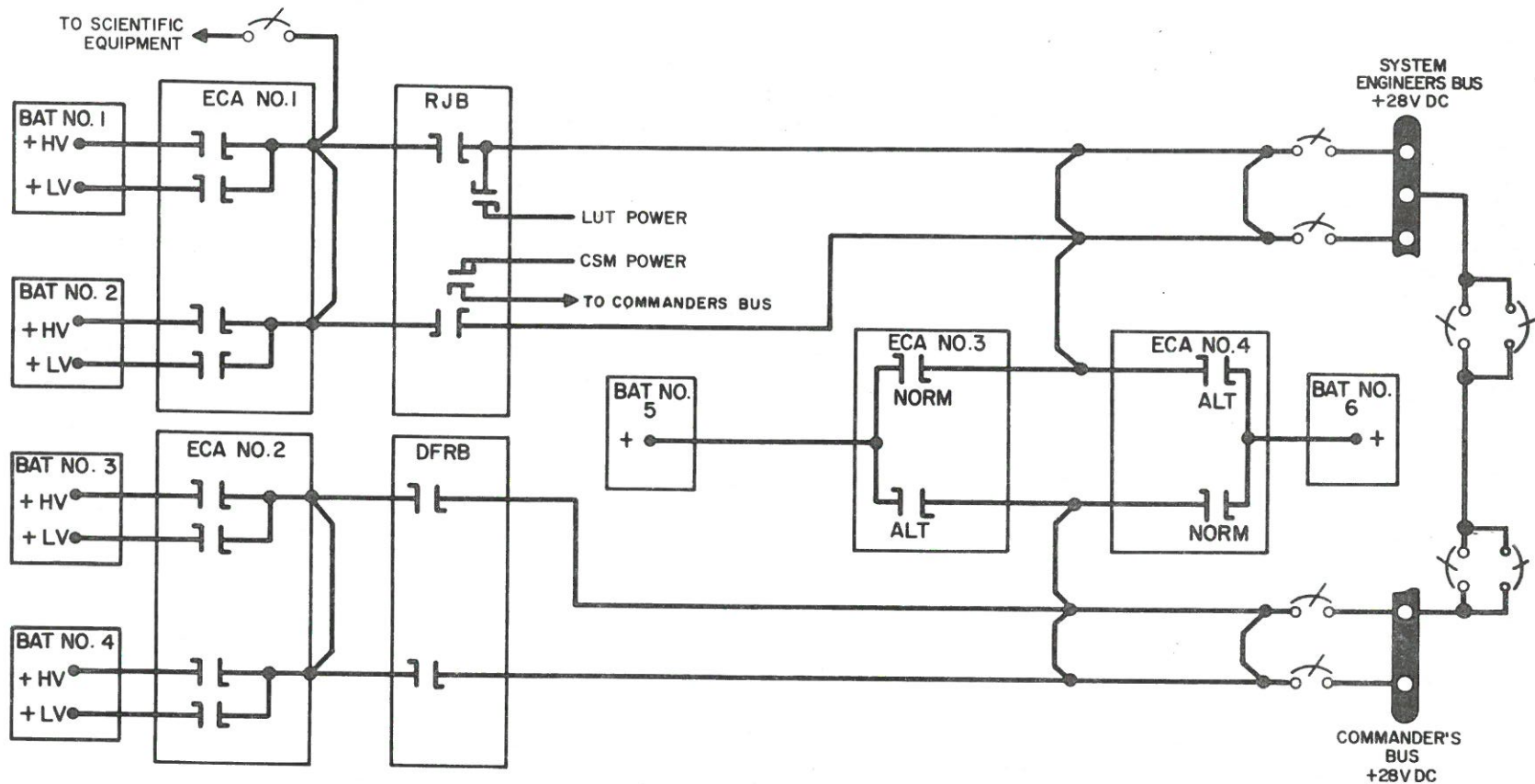
ATMOSPHERE REVITALIZATION SECTION SCHEMATIC



WATER MANAGEMENT SECTION SCHEMATIC

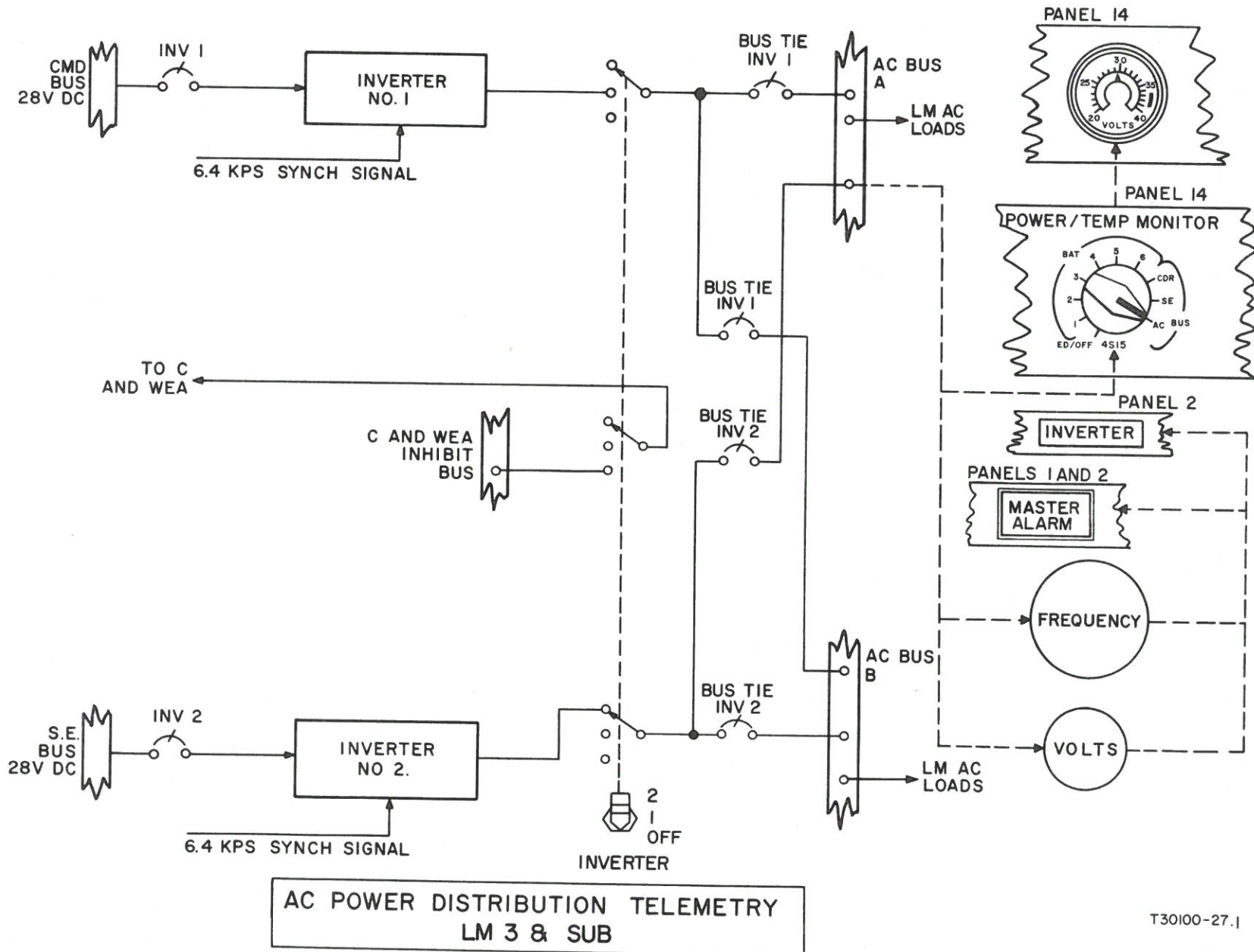
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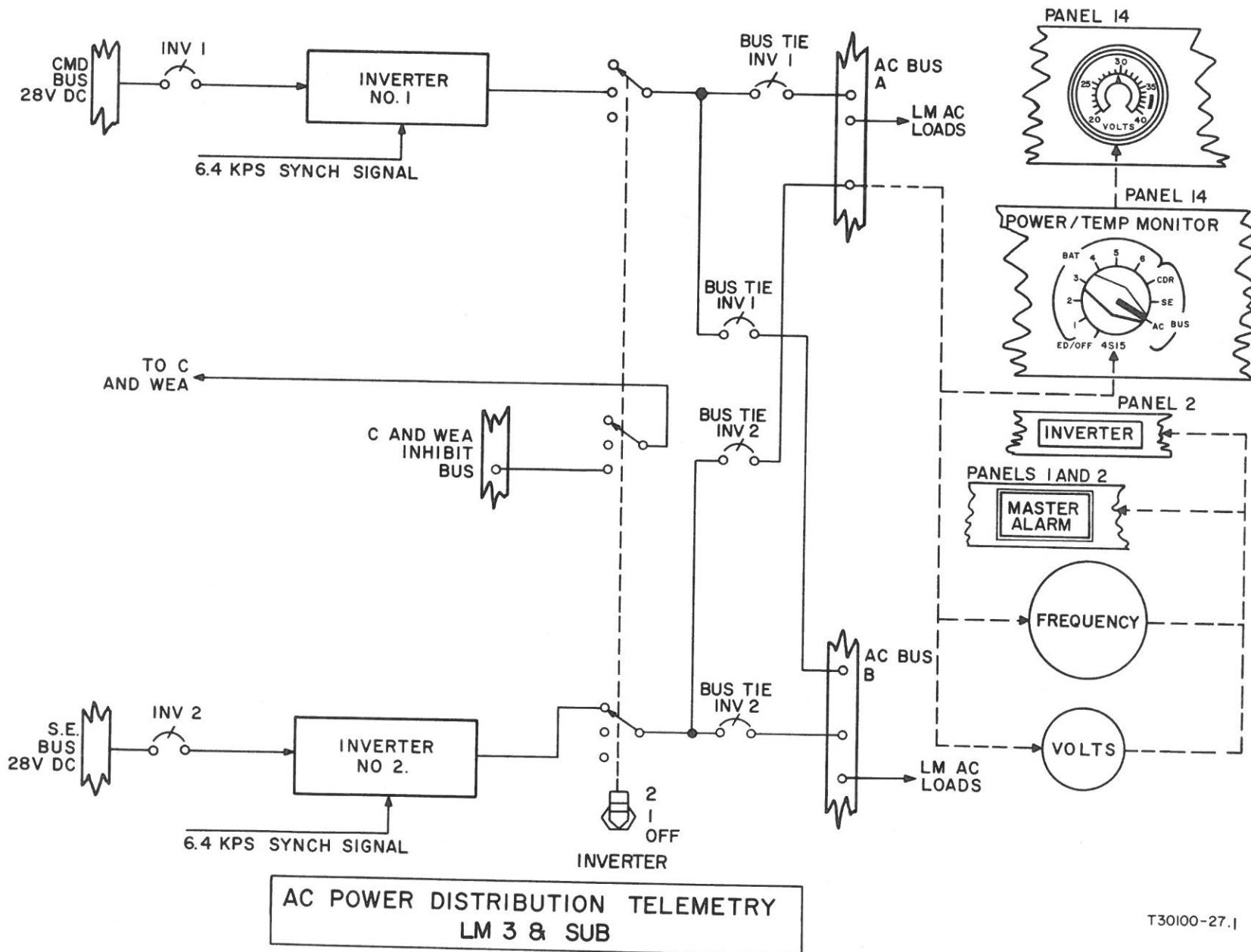


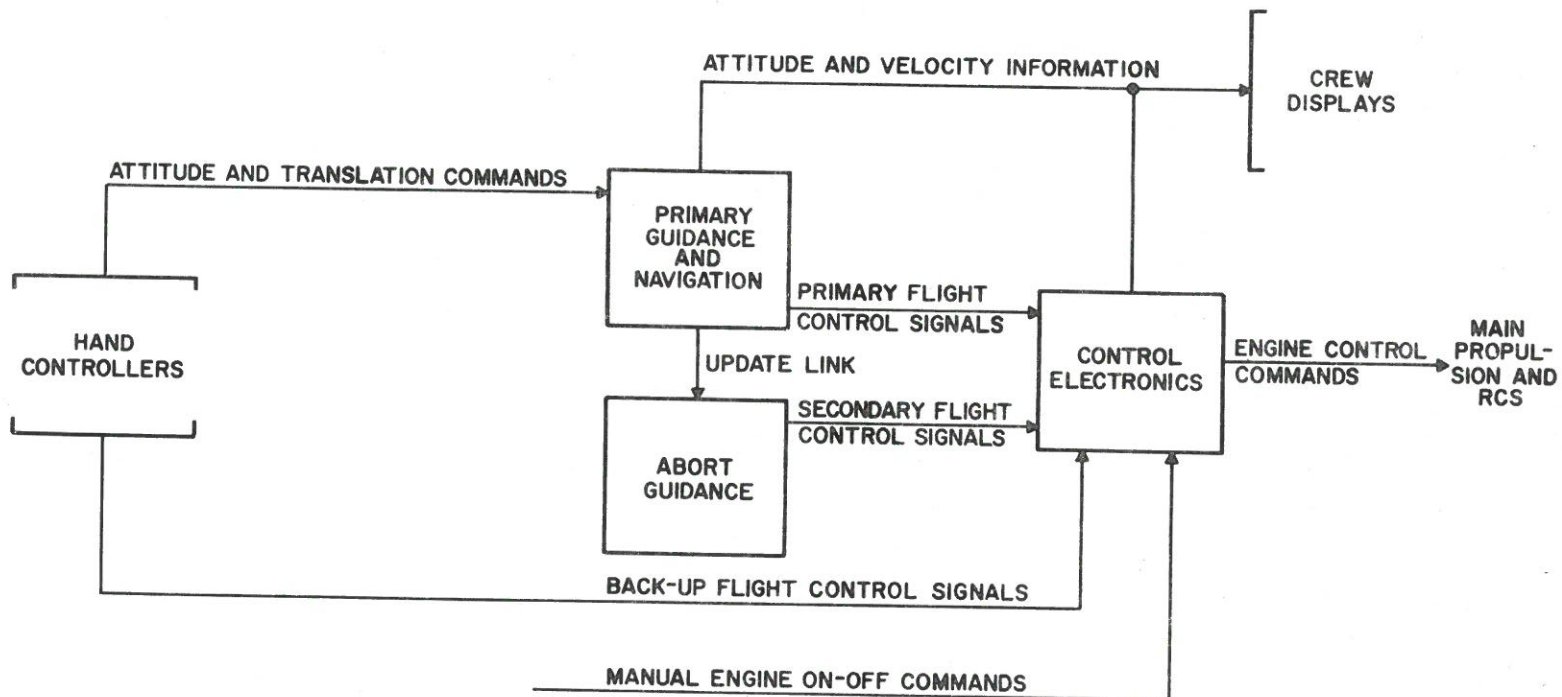


EPS FEEDER SYSTEM

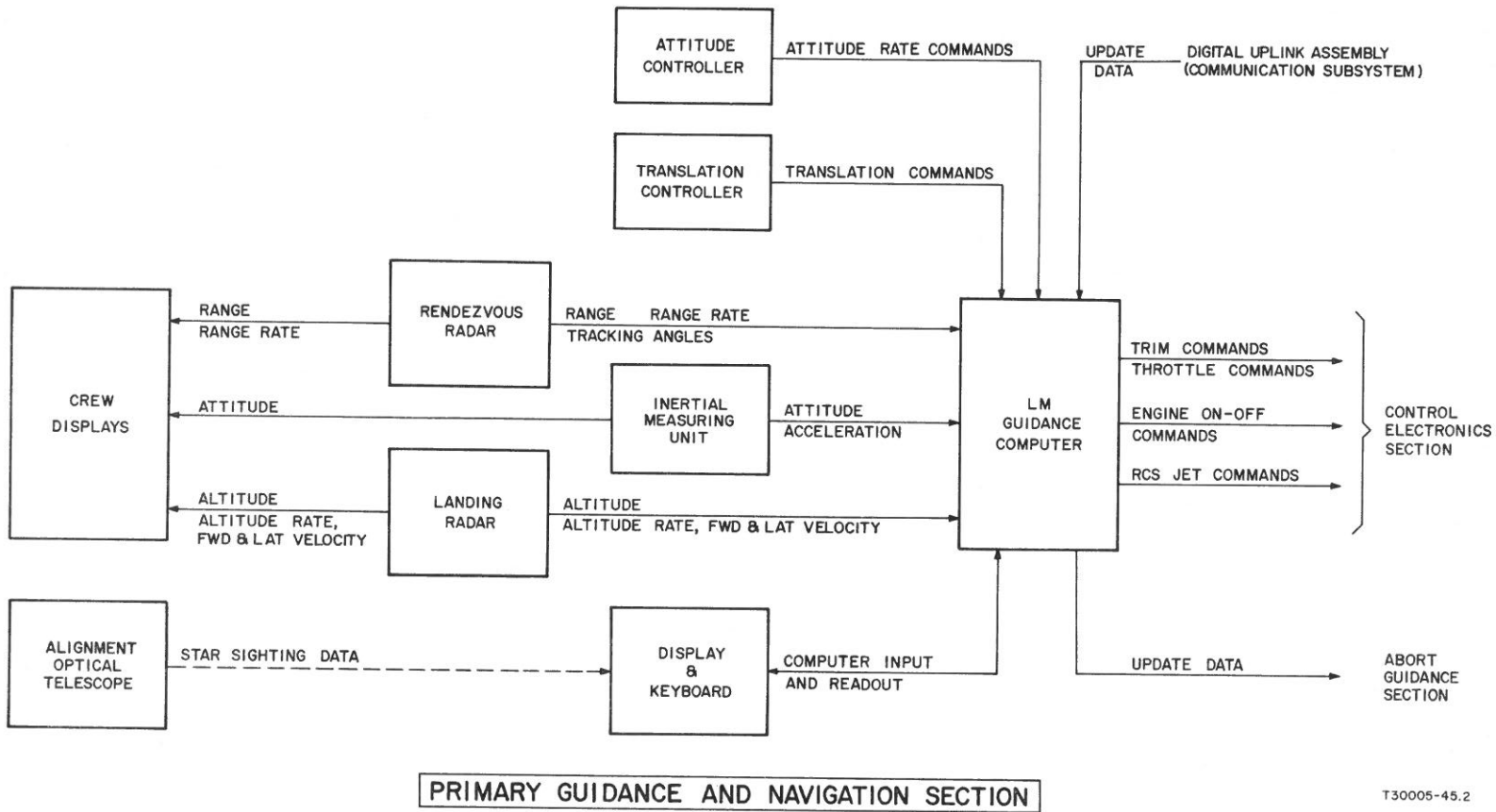
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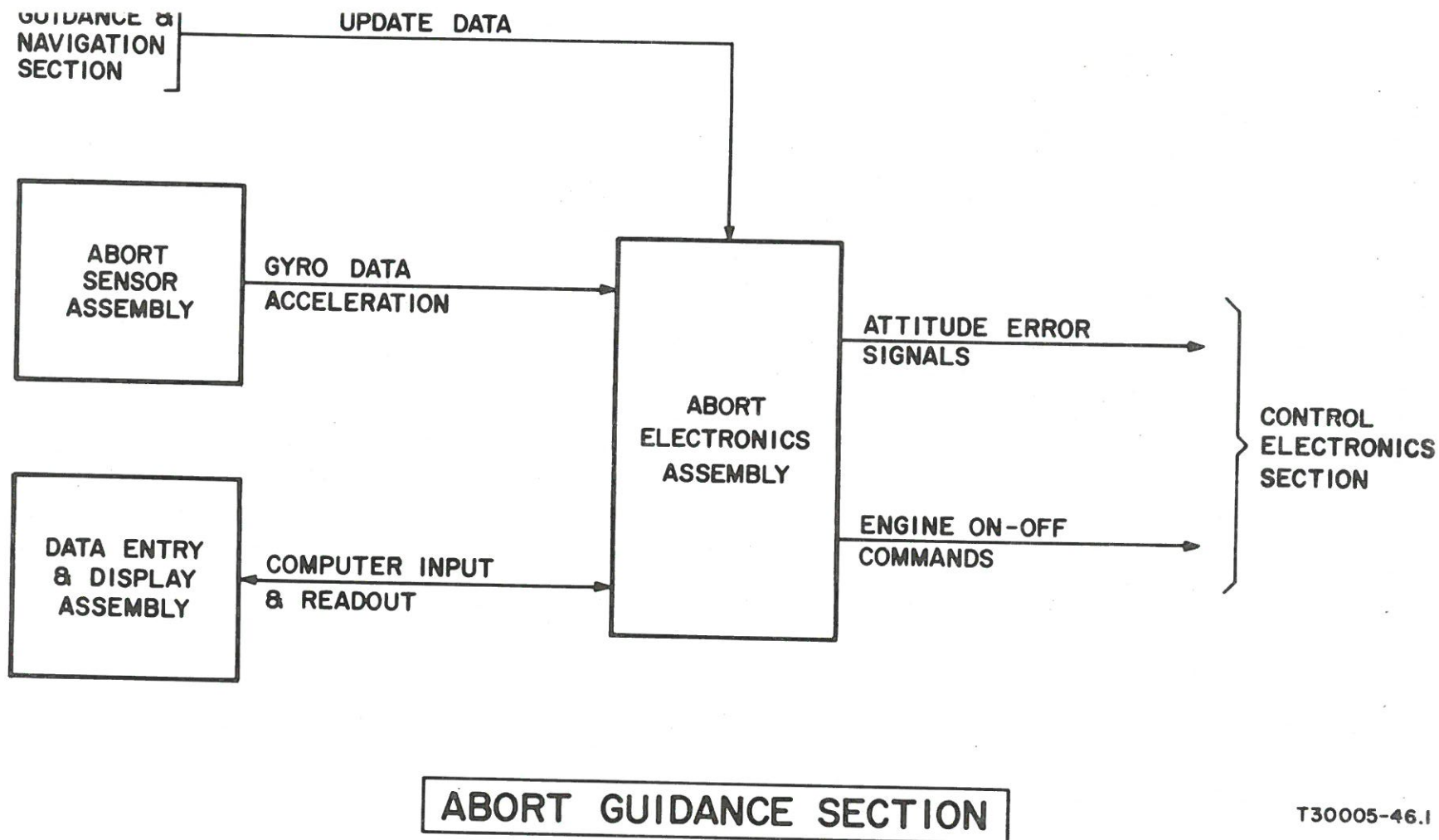




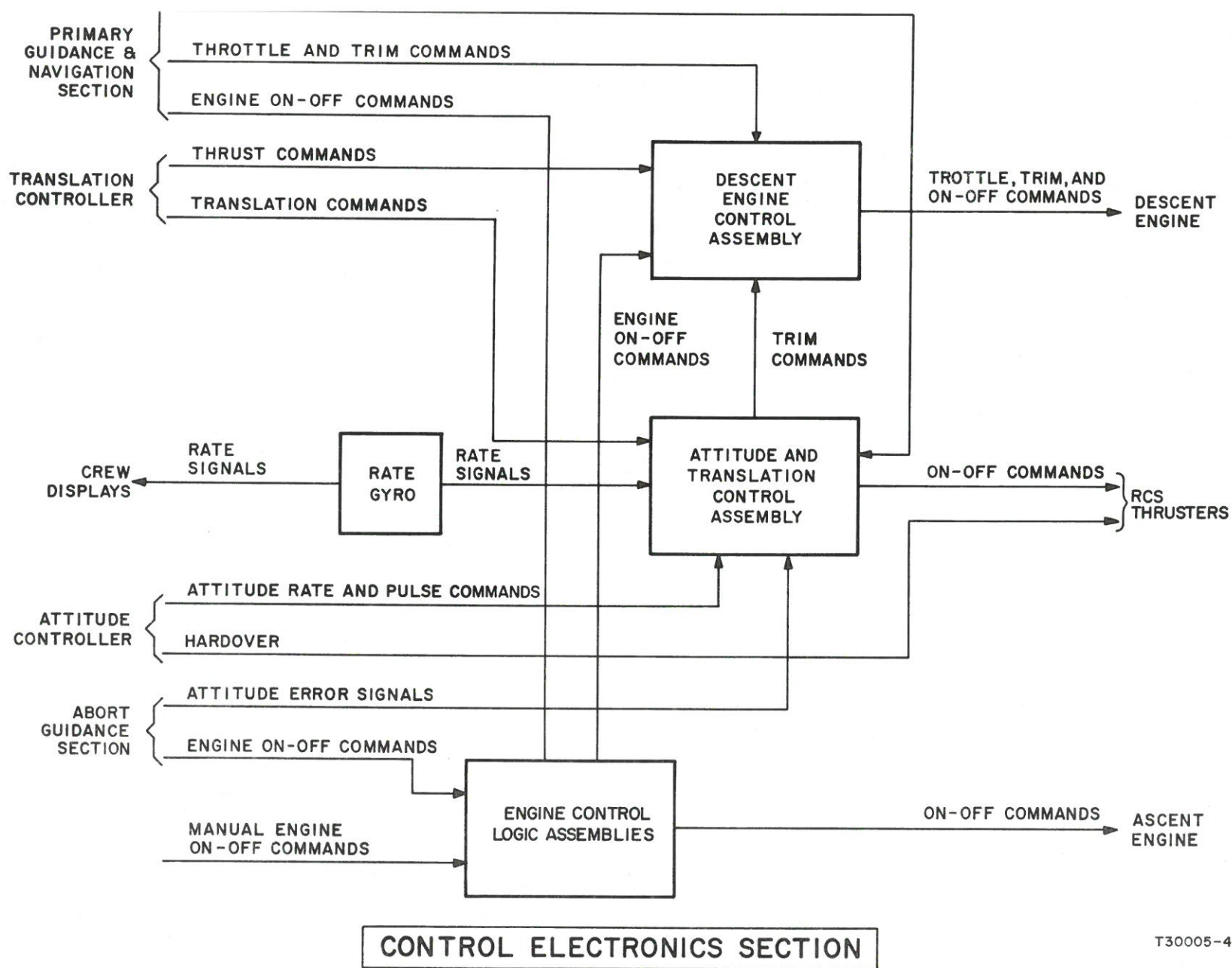
**LM GUIDANCE, NAVIGATION
AND CONTROL SUBSYSTEM**

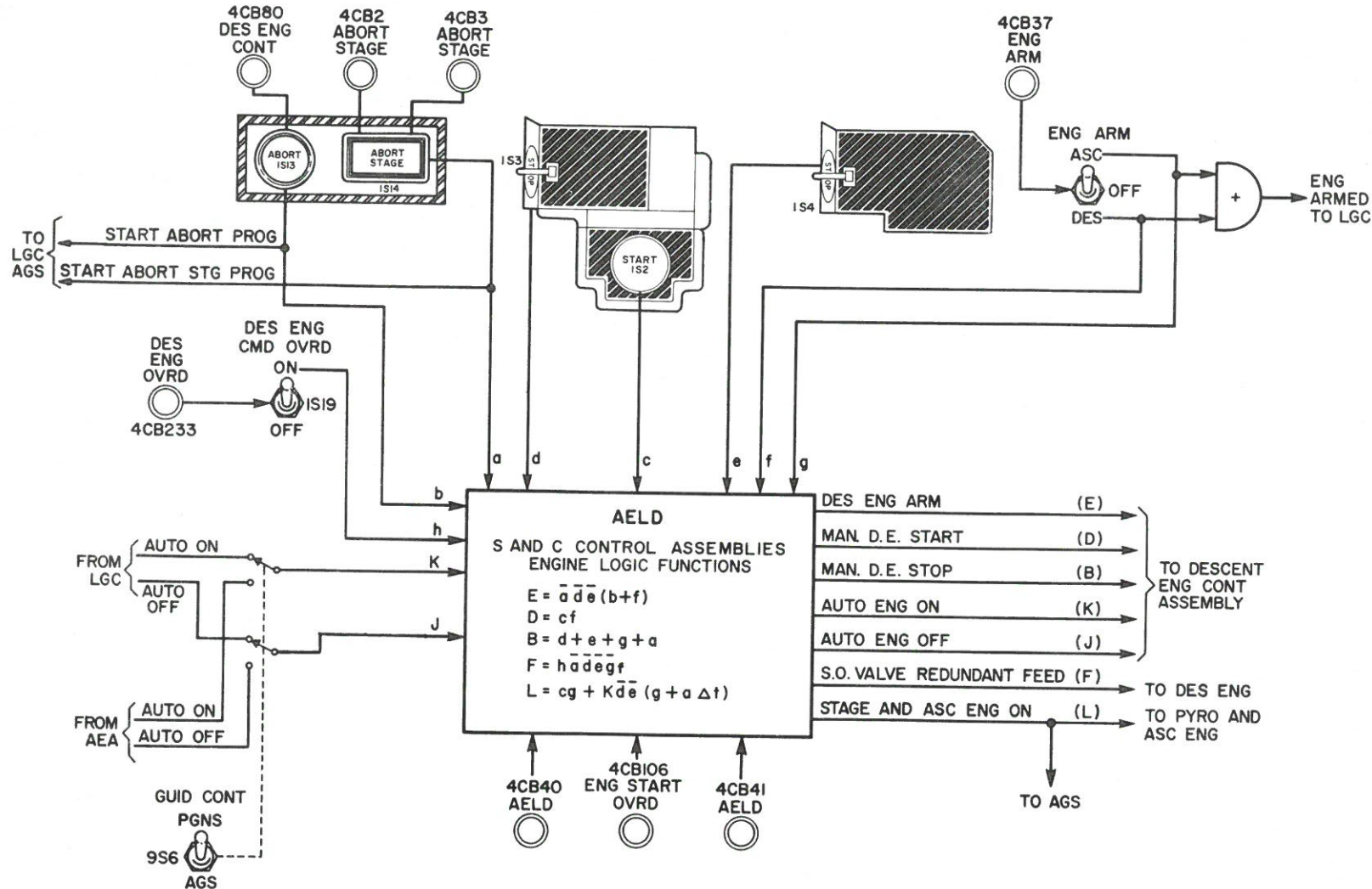


T30005-45.2



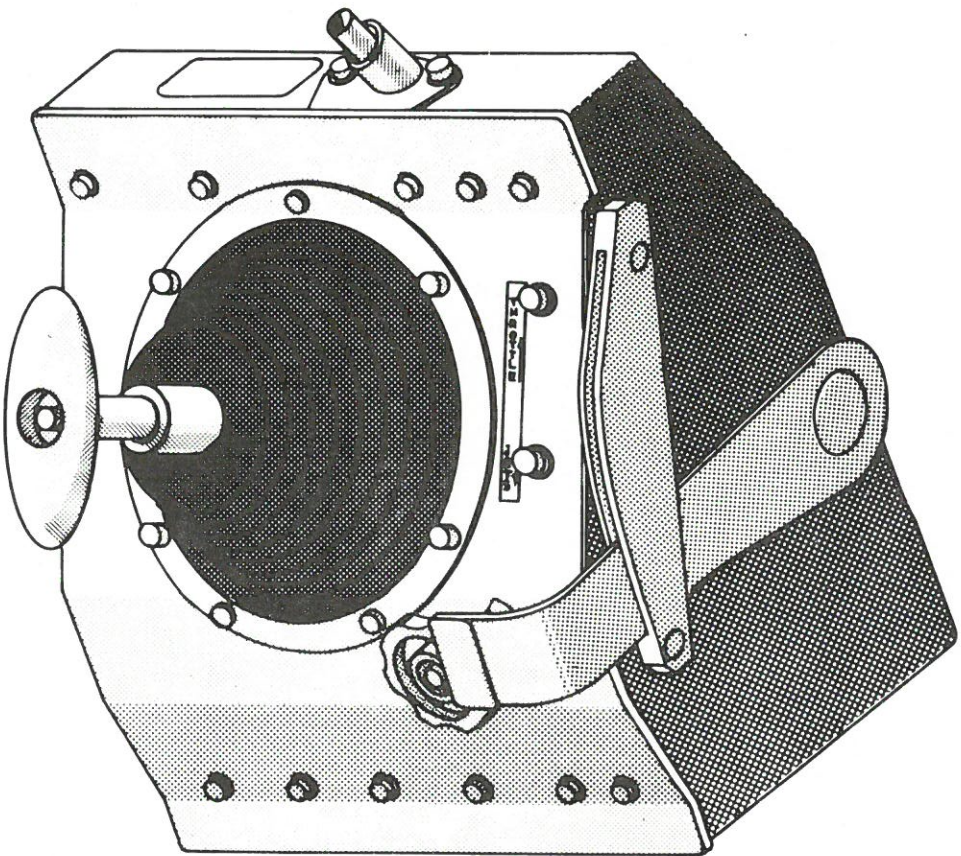
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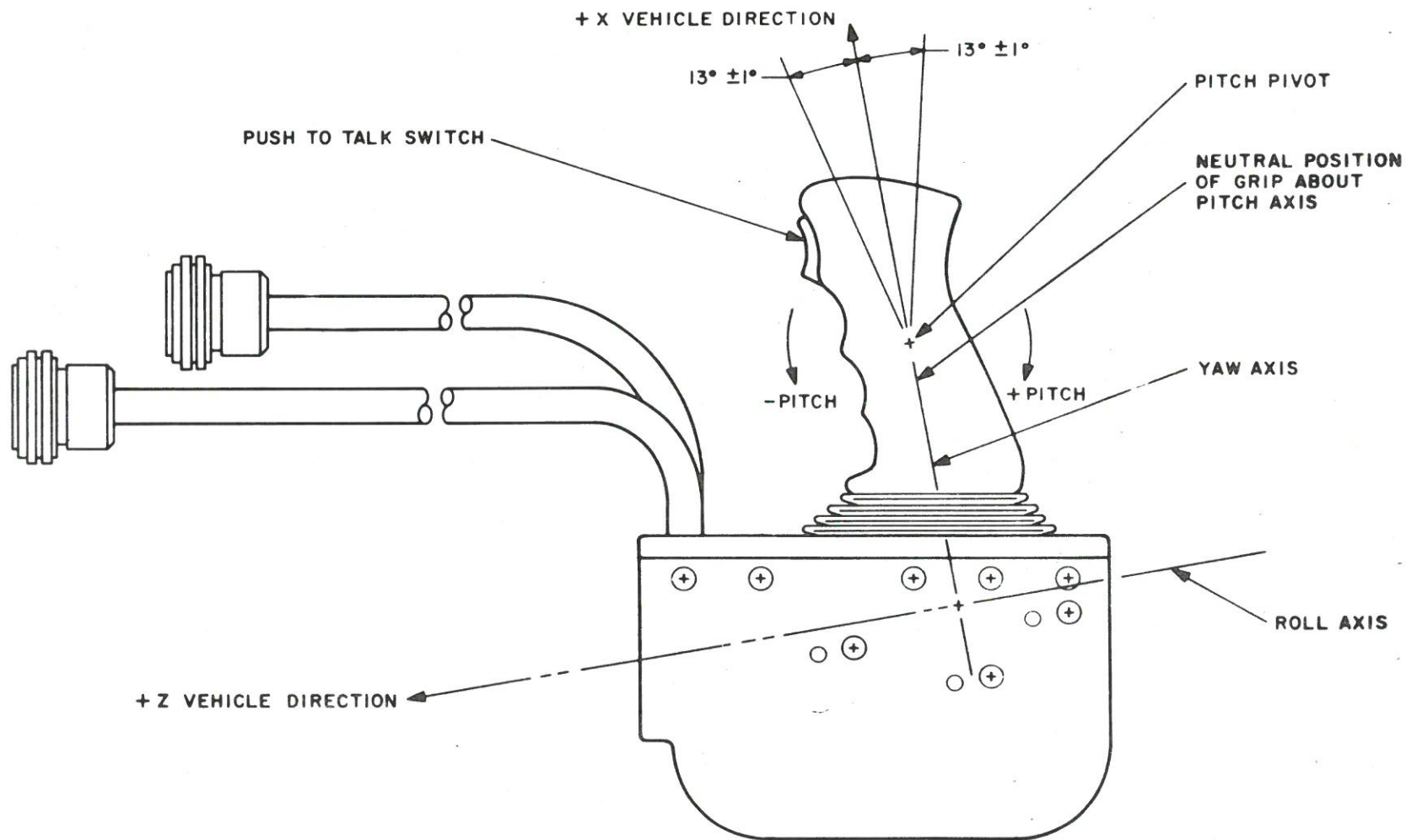
S AND C CONTROL ASSEMBLIES ENGINE LOGIC

T30312-50.1



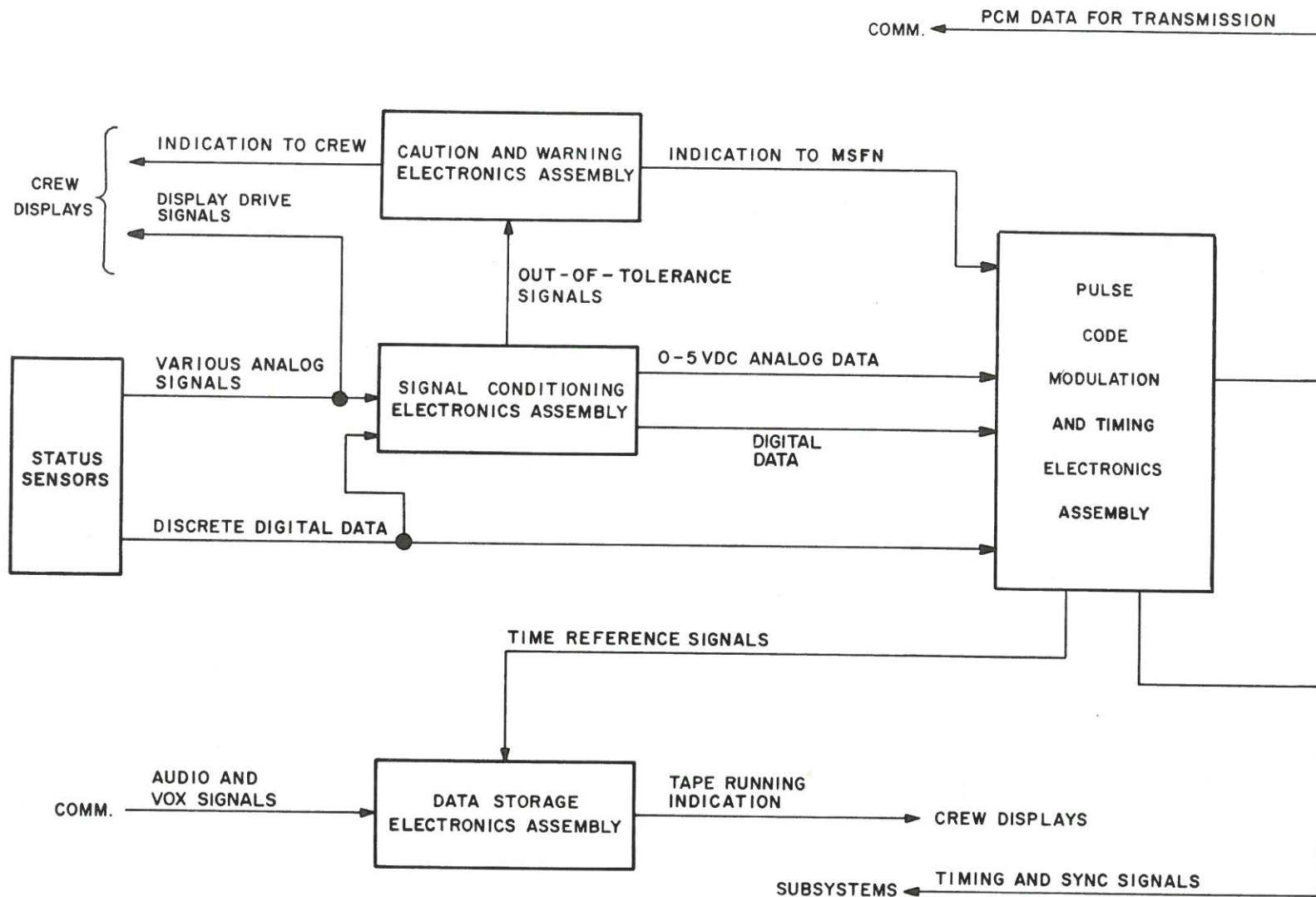
THRUST TRANSLATION CONTROLLER ASSEMBLY

T30005-51.1



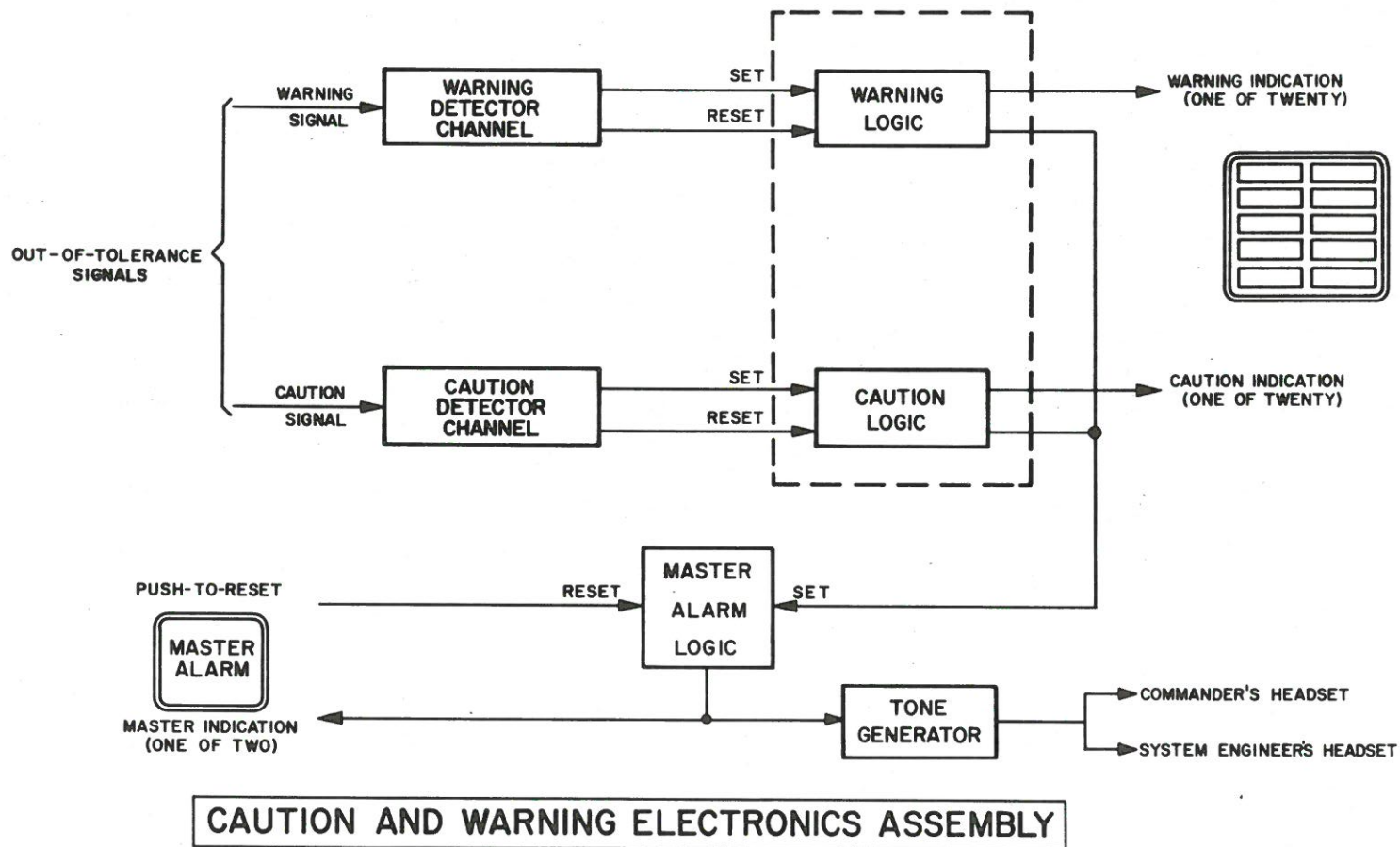
ACA MANIPULATION

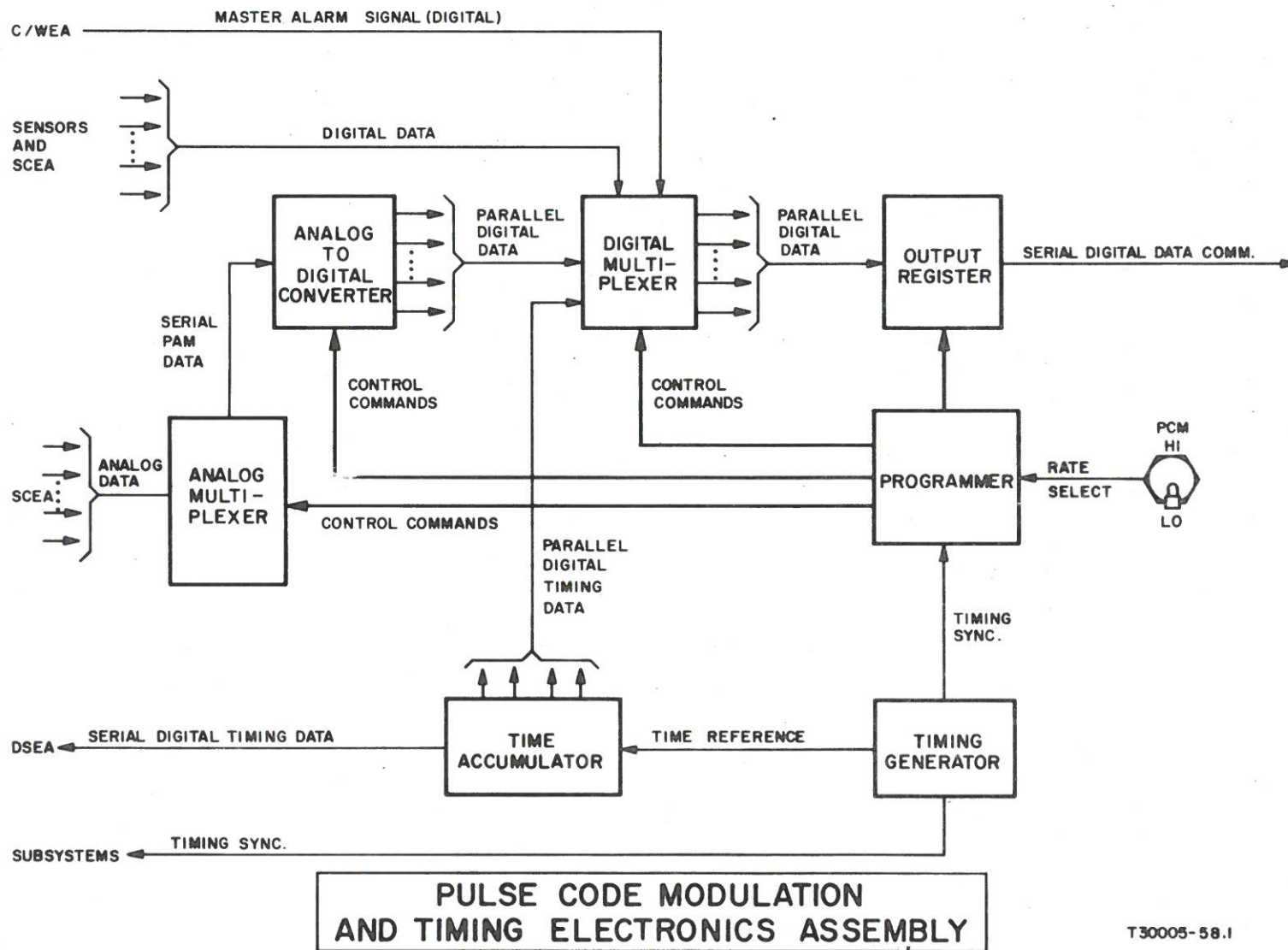
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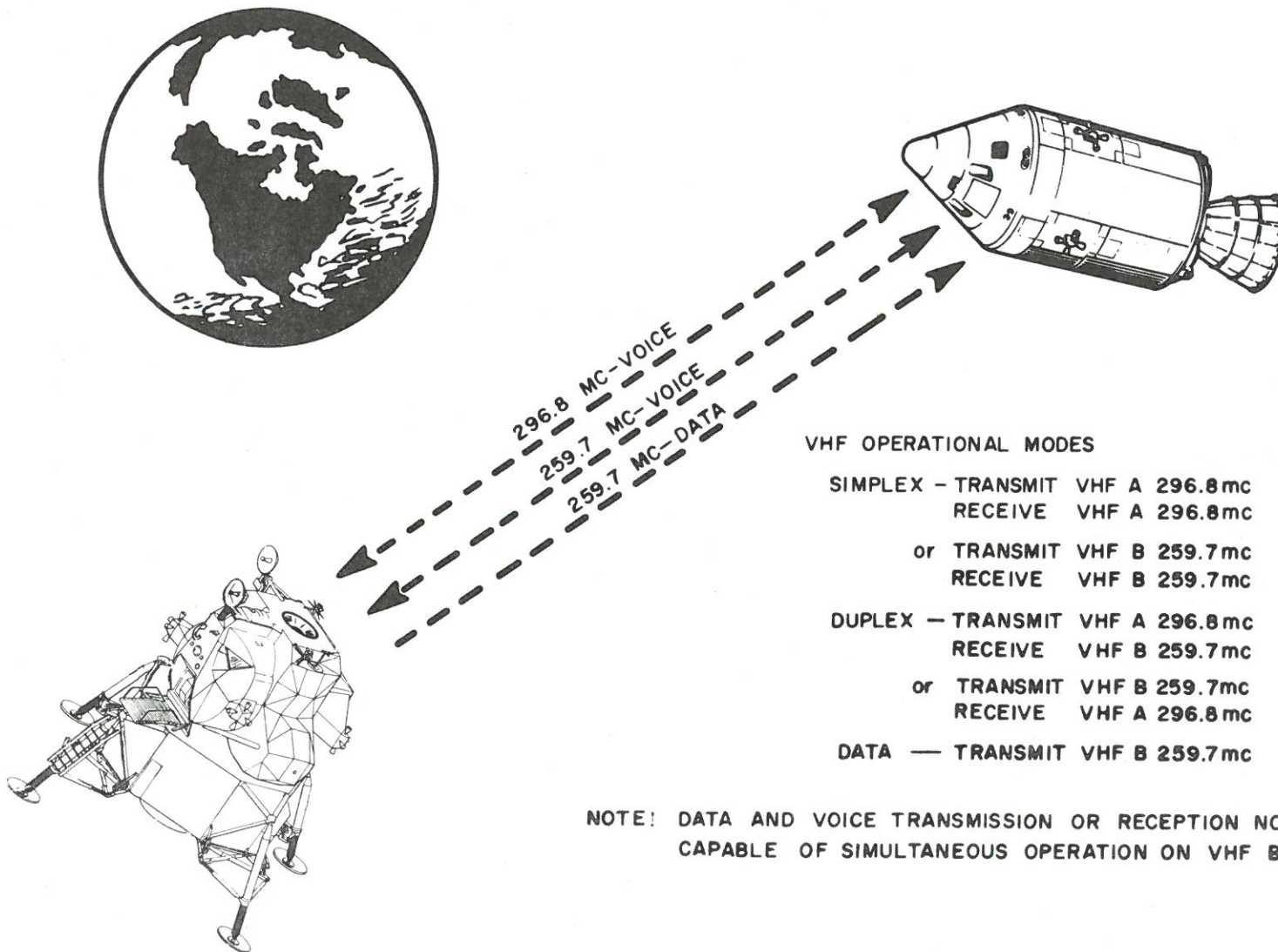
LM INSTRUMENTATION SUBSYSTEM

T30005-57.2





T30005-58.1



VHF OPERATIONAL MODES

SIMPLEX — TRANSMIT VHF A 296.8mc
RECEIVE VHF A 296.8mc

or TRANSMIT VHF B 259.7mc
RECEIVE VHF B 259.7mc

DUPLEX — TRANSMIT VHF A 296.8mc
RECEIVE VHF B 259.7mc

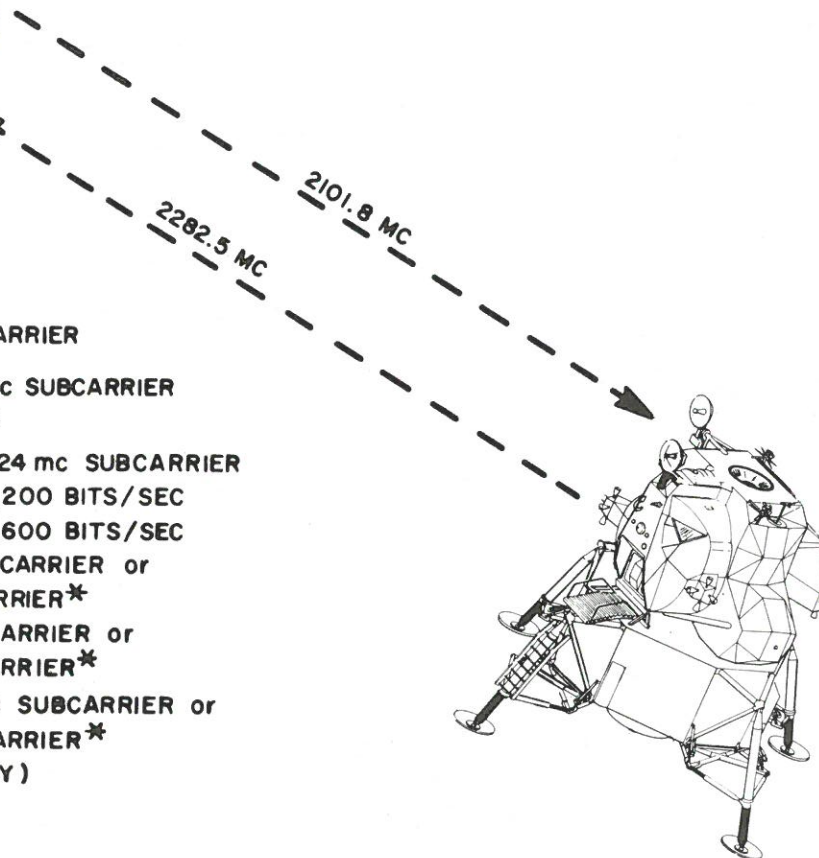
or TRANSMIT VHF B 259.7mc
RECEIVE VHF A 296.8mc

DATA — TRANSMIT VHF B 259.7mc

NOTE! DATA AND VOICE TRANSMISSION OR RECEPTION NOT
CAPABLE OF SIMULTANEOUS OPERATION ON VHF B

LM-CSM COMMUNICATIONS CAPABILITY

T30005-115.1



S-BAND DUPLEX OPERATION

UPLINK 2101.8 mc ----- VOICE ON 30-kc SUBCARRIER
 -PRN RANGING CODE
 -DATA OR VOICE ON 70-kc SUBCARRIER

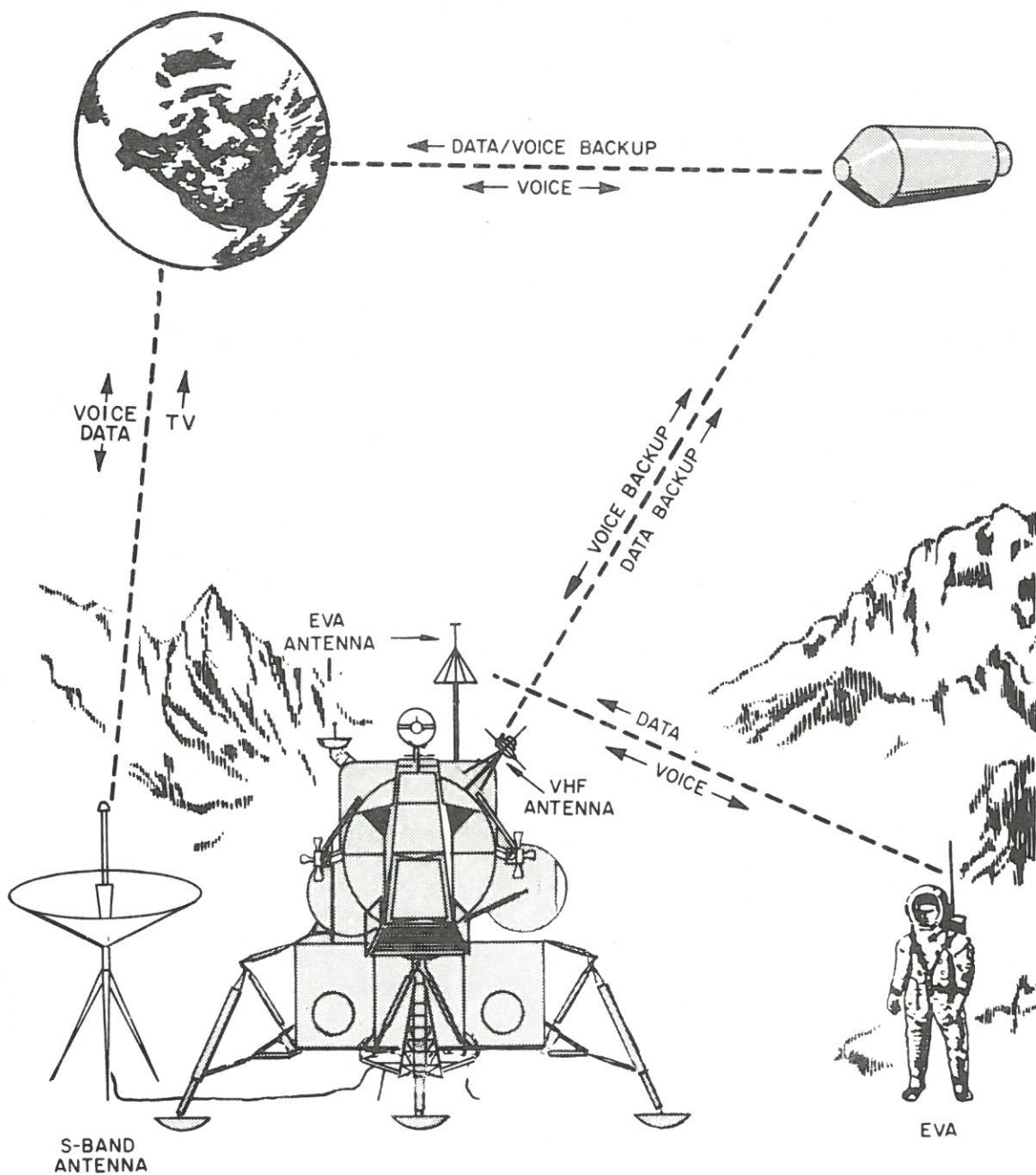
DOWNLINK 2282.5 mc ---- PRN RANGING CODE *

- PCM NRZ DATA ON 1.024 mc SUBCARRIER
 HI BIT RATE - 51,200 BITS/SEC
 or LO BIT RATE - 1,600 BITS/SEC
- VOICE ON 1.25 mc SUBCARRIER or
 DIRECTLY ON CARRIER*
- EKG ON 1.25 mc SUBCARRIER or
 DIRECTLY ON CARRIER*
- EMU DATA ON 1.25 mc SUBCARRIER or
 DIRECTLY ON CARRIER*
- TELEVISION (FM ONLY)
- EMERGENCY KEY *

* NOTES PM MODE OF OPERATION ONLY

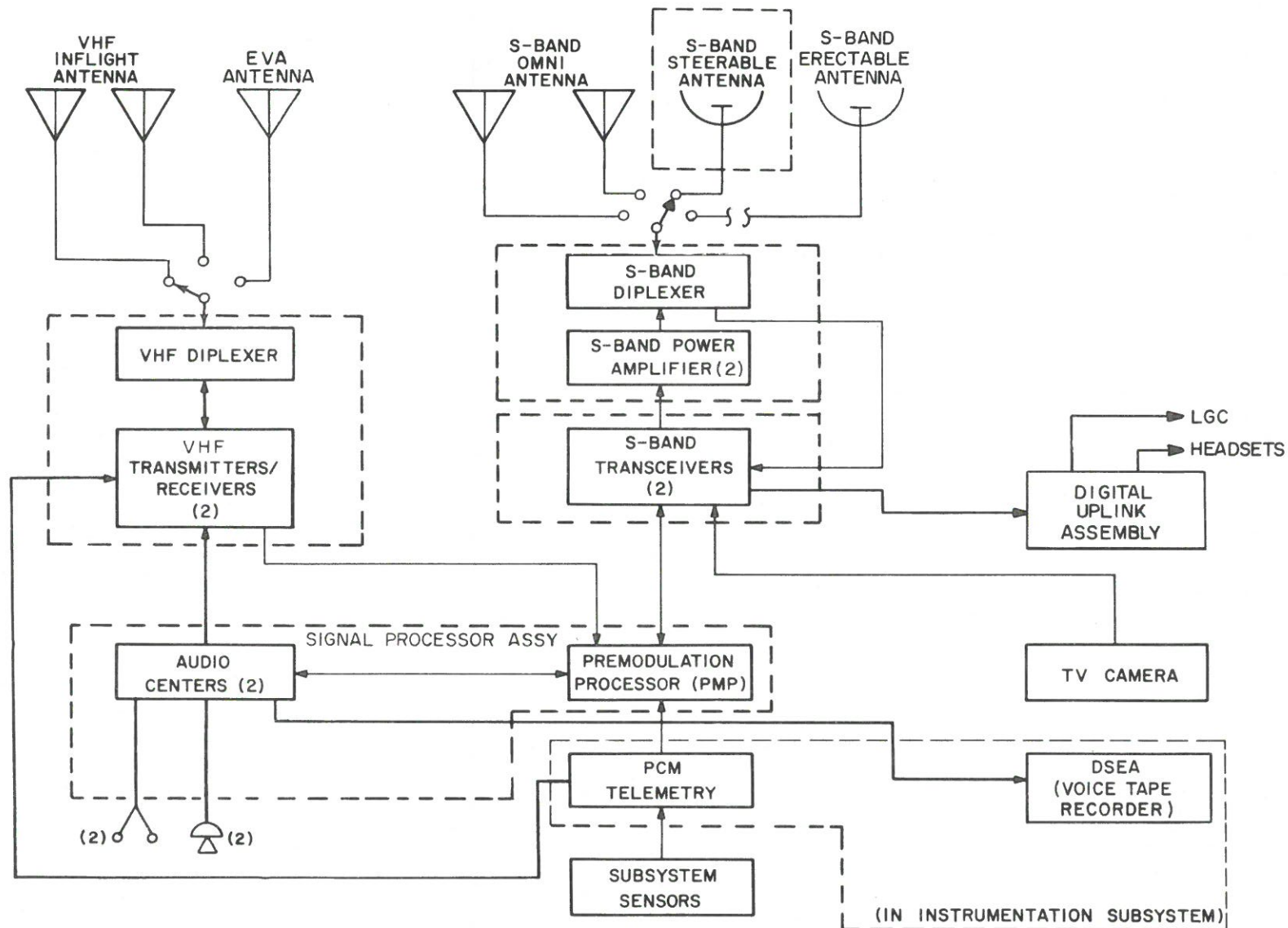
LM-MSFN COMMUNICATIONS CAPABILITY

T30005-116.2



LUNAR SURFACE COMMUNICATIONS CAPABILITY

T30005-40.1



LM COMMUNICATIONS SUBSYSTEM